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OPERATIONS ON THE ENLARGED PROSTATE, WITH A TABULATED SUMMARY OF CASES.

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It is common knowledge that in a considerable number of subjects of prostatic enlargement palliative measures—hygiene and the intelligent use of the catheter—are inadequate to avert or to remedy a fatal cystitis and consecutive pyelo-nephritis. These cases were formerly regarded as virtually beyond surgical aid; aside from the relief of retention by the catheter, or when that failed by puncture, they were abandoned as hopeless. The rise of vesical surgery in the last decade furnished among its early achievements the complete relief of prostatic cystitis by temporary drainage of the bladder, now a standard operation.

Yet this measure, though extremely gratifying in its immediate results, is in theory unsatisfactory and in practice but too often of only temporary benefit. The relief so obtained is of uncertain tenure; the factors which originally induced the malady remain undisturbed; they may, and as experience shows they often do, cause a recurrence of the vesical inflammation. A rational procedure should aim to secure not merely cessation of existing cystitis, but also, by removal of the cause, prevention of its recurrence—a radical instead of a palliative operation. Various measures have been practised to secure this result, especially during the past five years; it is the purpose of this writing to collate

these experiences in order that a definite plan of procedure in such cases may be deduced, so far as present knowledge justifies such deduction.[1]

The simplest method of affording lasting relief is evidently the formation of a permanent suprapubic artificial exit, which avoids the obstructing prostate. This measure has been often executed in the past half-century, usually by puncture with a trocar, sometimes by cystotomy, a tube being more or less constantly worn subsequently.[2] To obviate the frequent dribbling of urine and the wearing of a plug, McGuire, of Richmond, has in eight cases made the fistula run obliquely from the lower end of the vesical wound to the upper angle of the cutaneous incision, some three or four inches long, and bearing "the same relation to the bladder that the spout of a coffee-pot does to the bowl." By this ingenious arrangement the urine can be completely retained, he says, from two to six hours. Morris, of New York, has in one case clothed the fistulous track with skin by transferring narrow cutaneous flaps into the wound at the time of operation, thereby securing a better lining for the fistula and diminishing its tendency to spontaneous closure. (*N. Y. Med. Journ.*, July, 1890.)

The permanent suprapubic fistula is a mutilation obviously to be employed only when the restoration of the urethral channel seems impracticable. Aside from the objections on the score of sentiment and comfort, the fistula cannot be relied upon to secure immunity from cystitis; thus Bennett May mentions three instances of such failure in his own practice. The explanation of the failure is perhaps that the projecting portions of the prostate prevent complete evacuation of the vesical contents; and probably that these tumors, like other neoplasms and foreign bodies, induce mechanical irritation of the bladder. The latter condition seems to have been exemplified in one of May's cases, which, after the fistula had failed to give relief, was entirely cured by the removal of a large middle lobe.

The theory of the radical operation assumes that the cause of chronic retention is mechanical obstruction by the enlarged prostate; that such prostatic obstacles are capable of removal; and that after such removal the bladder will resume its function of voluntary evacuation.

These propositions have been separately and collectively denied by three of the foremost among living genito-urinary surgeons—Thompson, Guyon, and Socin. Guyon[3] maintains as a deduction from histological

[1] To the many surgeons who kindly responded to a request for their personal experience, as well as to the editors of medical journals who assisted him in the collection of information, the writer desires to express his deep appreciation of the courtesy received.

[2] "Supra-pubic Cystotomy for Purposes other than the Extraction of Calculus," by J. H. Packard, Trans. Amer. Surg. Assoc., 1887, contains an extended account of these operations.

[3] Annales des Mal. des. Org. Gén.-urin., March, 1885.

researches that prostatic enlargement is but a local manifestation of a general senile "sclerosis," which pervades the entire urinary tract; that the chronic retention is chiefly due not to prostatic obstruction but to the coincident impairment of vesical contractility caused by sclerosis of the bladder muscles; hence that the removal of prostatic obstacles is irrational and futile to restore voluntary urination. He asserts further as the result of post-mortem observation that the prostatic obstacle is rarely of such contour as to permit its removal by the surgeon. Socin advances essentially the same opinions. Thompson, while repudiating sclerosis as the cause and assuming that enlargement of the prostate is an attribute of senility, endorses Guyon's conclusions.

These are, however, conjectures unsupported by clinical experience. Thompson and Socin have not yet performed—or at least have not published—a single radical operation; Guyon made his first attempt in July, 1889, and found a prostatic growth readily removed.

The accumulated clinical observations of the past five years prove that these traditions of the earlier surgeons, upheld by Guyon and Thompson—which have dominated surgical opinion and practice—must be restricted to a minority only of prostatics.[1] For it is clearly demonstrated—

(1) that there is a larger class, entirely distinct from these, in whom the failure to evacuate the bladder is due in no wise to degeneration of the vesical muscles, but solely to the mechanical obstruction offered by prostatic growths; since the removal of such obstacles has been followed in over two-thirds of the cases previously dependent upon the catheter, by restoration of the vesical functions.

(2) It is shown that the enlargement of the prostate commonly called "senile" hypertrophy is not limited to advanced life. Thompson has strenuously taught that "it never appears but in advanced years," the minimum age being fifty-six; "I have never been able to meet with an instance of its occurrence at so early a period as fifty-three years of age."[2] Many others have seen it in younger men: McGill removed a prostatic collar, "the size of a large walnut," from a man aged fifty-three; M. Schmidt, a large middle lobe from a man of fifty-two; the writer has removed a prostatic growth from a patient aged forty-nine; Dunn excised a tumor of the lateral lobe from a man of forty-five; Iversen described a case at thirty-six years, which Güterbock says is no rarity. H. G. Mudd, of St. Louis, exhibited to the Association of Genito-urinary Surgeons, June 3, 1890, an extreme example of prostatic hypertrophy

[1] The writer takes the liberty of using this word to avoid the frequent circumlocution —"subjects of cystitis with prostatic hypertrophy;" the German *prostatiker* and French *prostatique* have long been standard equivalents. The term "prostatism" is also a needed designation for the condition discussed.

[2] Diseases of the Prostate, 1886, pp. 92, 93.

from a negro aged twenty-seven; the prostate and its outgrowths literally filled the true pelvis, and on microscopical examination were found to be fibro-myomatous without a suspicion of malignancy. On the same occasion Dr. Mudd mentioned a case of true prostatic hypertrophy, under the observation of Dr. H. H. Mudd and himself, in a child of five years.

(3) That the prostatic obstruction is usually—contrary to the opinions of Guyon and Thompson—of such form as to permit excision, is shown by the fact that in sixty-two out of seventy-seven cases of supra-pubic incision, such obstacles were found and removed. These tumors when microscopically examined have been reported as fibro-myomata, enclosing more or less glandular structure.

The assumptions upon which the radical operation is based are therefore justified by experience; it is proven that in many prostatics the source of the evil is to be sought not in sclerosis nor senile degeneration of the bladder, but in mechanical obstruction by prostatic tumors; that these tumors are not a product of sclerosis, nor of senility, nor even limited to advanced life; their greater frequency after forty years of age is paralleled by that of other tumors, particular the fibro-myomata of the homologous organ, the uterus[1]—which are not considered an attribute of senility; that these tumors are in most instances susceptible to removal; and that in such cases a well-executed radical operation restores voluntary urination.

It is indisputable, however, that in many prostatics of advanced age a degeneration of the vesical walls coexists; the contractility of the bladder is seriously impaired, and removal of the prostatic obstruction fails to restore voluntary evacuation of the organ. The proof of this condition is furnished, as Guyon points out, by occasional cases of chronic retention and cystitis in elderly men *without* prostatic obstruction or other mechanical obstacle; the failure to evacuate the bladder being due simply to impairment of the vesical contractility. In nearly one-third of the cases on record the radical operation failed to restore voluntary urination; while in several it is evident that the removal of

[1] The structural identity of prostatic tumors with uterine fibroids has been demonstrated in the last half-century by various surgeons and pathologists, including Velpeau, Paget, and Billroth. The clinical analogy seems equally striking; rare in young women, the frequency of uterine fibroids increases with age until at the climacteric the percentage fully equals that of the corresponding prostatic disease in elderly men (Bayle, Klob). With the cessation of the uterine function, the formation and growth of fibroids usually cease.

Since the functional activity of the prostate persists later in life than that of the uterus, its tumor-formation naturally continues to a more advanced age, ceasing, however, at sixty-five to seventy. The climax of this tumor-formation may be contemporaneous with, though independent of, the senile degenerations permeating the urinary tract, as well as other tissues; the occurrence of both in the same subject seems a pure coincidence.

the obstacle was incomplete, yet in others the explanation of failure seems to have been impaired vesical contractility.

Differentiation between the obstructive and degenerative factors in a given case should naturally precede operative measures. At present such differential diagnosis cannot always be accurate; the subject of pronounced sclerosis exhibits rigid arteries, polyuria, and often hæmaturia (Guyon); his prostate is extremely hard; the flow of urine through the catheter is feeble; complete evacuation of the bladder is accomplished only by pressure upon the hypogastrium. In the presence of these symptoms restoration of voluntary micturition cannot be expected; the radical operation is useless except to facilitate difficult catheterism—unless, indeed, Kümmell's success in gradually restoring vesical contractility by means of strychnine and electricity, shall be found frequently capable of repetition.

Modes of Operation.—Prostatic obstacles to urination have been attacked by four routes:

1. The urethra (Mercier, Bottini).
2. Perineal incisions (Harrison, Keyes).
3. Supra-pubic cystotomy (Dittel, Belfield, Kümmell, McGill).
4. Combined perineal and supra-pubic incisions (M. Schmidt, Belfield).

The operation should secure three results: restoration of a low-level urethra by removal of prostatic obstacles; temporary drainage of the bladder; and stretching of the prostatic urethra. The choice of operation is, therefore, a mechanical problem, determined largely by the accessibility of the prostatic obstruction. Now, these present the greatest diversity in size, shape, and location; whether the obstruction is a distinct tumor, median or lateral, sessile or pedicled, intra-vesical or intra-urethral; or a so-called bar; or a combination of these—can be in only exceptional cases more than conjectured by any means other than digital contact, which is, therefore, the first essential of every accurate radical procedure.

This condition obviously excludes from serious consideration all operations from the meatus, and shows the limitations of operations through any perineal incision, since the average finger is too short to explore or even to reach the vesical orifice from the perineum when the prostate is much enlarged. Operations from the meatus are evidently, in the light of present experience, tentative, haphazard procedures; they were based upon the faulty conception that the prostatic obstacle is always a bar or other median obstruction; and that the division of this supposed bar would effect relief. A scrutiny of the appended cases shows how seldom such a procedure could have removed the obstacle to urination. These operations of Mercier secure no one of the three essentials sought; they contain, moreover, elements of danger foreign to the later procedures where the cutting-edge in the bladder is directed and controlled by

digital contact. Although Mercier is said to have operated over four hundred times, but little definite knowledge of his results is procurable; his followers have been few and his operations seem now to possess only historic interest. Bottini's modification of Mercier's operation—the substitution of a cauterizing- for a cutting-edge—is equally unsatisfactory and seems to have found no adoption; though in a letter dated May 8, 1890, Prof. Bottini kindly writes that he has performed it in sixty-four cases, with "entire success in fifty-four, imperfect in four, and in six without profit."

That *lateral perineal cystotomy* affords a means for the removal of prostatic outgrowths is shown in the repeated occurrence of this accident—for it was always unintentional and undesired—to Ferguson, Gross, Cadge, Williams, and other lithotomists for generations back. More recently a median tumor discovered during lithotomy has been in several instances intentionally removed (Dittel, Keyes, Landerer, Billroth, Frank). Prostatectomy by this route seems, however, never to have been practised except as an incident to lithotomy; the extensive incision appears to have no compensatory advantage over less formidable and more satisfactory modes of approach.

Perineal urethrotomy has been employed in some thirty cases as the avenue of access to the prostatic obstacle; small median tumors ("middle lobes"), transverse muscular bands, and lateral lobes have been incised or excised. Yet many cases are not susceptible to satisfactory operation by this incision; the finger often fails to explore the vicinity of the vesical orifice when the prostatic urethra is greatly lengthened and the rigidity of the prostate seriously restricts the use of instruments passed with the finger through this incision.

The surgeon may therefore fail to detect the obstructing portion, or find its removal impossible. Thus Wishard was unable to remove the obstruction by perineal urethrotomy, but subsequently found and excised a median tumor by a suprapubic incision. J. D. Thomas failed to detect during perineal prostatotomy a large lateral outgrowth which was discovered at the autopsy two years later (personal letter). McGill says that "in only three of the twelve cases on which I have operated would it have been possible satisfactorily to remove the projecting portions of the prostate by the perineal incision."

In Case 9 of the table the writer failed to determine the outline of the obstruction tunnelled from the perineum; at the autopsy seven months later, the obstacle was found to be a median tumor, having the size and shape of a walnut, with a relatively small attachment; it could have been readily removed by suprapubic cystotomy, a fact which induced the adoption of this incision in subsequent operations. Possibly the failure of perineal operations to restore voluntary urination has in

various instances been due to incomplete operation, the surgeon failing to discover the extent of obstruction.[1]

Since the perineal incision will certainly fail in a large percentage of cases to afford access to intra-vesical obstacles, and since it is impossible to distinguish in advance the cases suitable from those inoperable by this incision, it is apparent that a better method, one applicable to every case, is required.

Suprapubic cystotomy seemed at first to fulfil every requirement; it secures minute exploration of the entire vesical surface of the prostate, the easy recognition and complete removal of the intra-vesical projections, and thorough drainage of the bladder. Prostatectomy[2] by this incision has been performed over eighty times with satisfaction to the operator and often with results most gratifying to the patient. Yet in several instances this operation has failed to detect or to remove the prostatic obstruction; failures which direct attention to the fact—rather obscured by the many brilliant successes in removing intra-vesical growths—that the object is to restore a low-level channel through the prostate, and not simply the excision of salient tumors. To this end exploration of the urethral is quite as important as that of the vesical surface of the prostate. For the canal may be distorted by growths imperceptible or inaccessible from the bladder; especially frequent is a pronounced thickening of the suburethral prostate, whereby the urethra is elongated and the vesical orifice displaced upward. In five cases recorded in the table such a mass has baffled the surgeon who approached it by suprapubic incision; in two (McGill) it could not be satisfactorily removed; in a third (Guyon) the partial removal was insufficient to restore the channel; in the remaining two this obstruction was overcome by perineal incision and stretching (M. Schmidt, Belfield). These cases seem worthy of detailed relation, because they demonstrate the occa-

[1] Watson, in his valuable monograph (Operative Treatment of the Hypertrophied Prostate, Boston, 1888), formulated the conclusion from a study of thirty anatomical specimens, that in two-thirds of the cases a radical operation can be thoroughly performed through a perineal urethrotomy by anyone with an index finger of at least three inches working length. The anatomical relations of the prostate in the unopened body are, however, so entirely different from those of the excised and incised specimen that conclusions based upon the latter should hardly be applied to the living subject. Moreover, as McGill tersely observes, "it is unwise to commence an operation with the probability of failing in one-third of the cases;" and "it is not advisable to limit the ability to perform an operation to gentlemen with preternaturally long fingers." It is gratifying to know that Dr. Watson's further clinical experience leads him to restrict to narrower limits the feasibility of the perineal operation (personal communication. June, 1890).

[2] The obvious etymological inaccuracy of this term is still of slight moment, since the real "prostatectomy"—extirpation of the entire prostate—is as yet a rare experiment.

sional insufficiency of the suprapubic operation to restore a proper channel through the prostate.

M. Schmidt, after removing a middle lobe by suprapubic incision and inserting a finger-tip into the vesical orifice, found a small but hard mass posteriorly, which was inaccessible from the bladder. Upon recovery the urinary symptoms returned, voluntary urination was still impossible, and the catheter met a distinct impediment in the prostatic urethra—in short, the channel through the prostate was still seriously obstructed. A month later Schmidt reopened the wound, but found no obstruction at the site of the former tumor. He then made perineal urethrotomy, stretched the prostate, and with a bistoury incised the hard mass at the posterior edge of the vesical orifice; perineal drainage was maintained for five weeks, when after a second stretching of the prostate the wound was permitted to close. After this the patient—who had been entirely dependent upon the catheter for a year—recovered the power of normal urination, which continued unimpaired during the time of observation, eighteen months. This carefully-observed case suggests the possibility that the failure to recover the vesical function after suprapubic operation may have been in other cases also due less to an assumed degeneration of the bladder than to a neglect to recognize urethral obstacles whose importance Schmidt so plainly demonstrated.

Guyon's patient was in good general condition, the bladder retaining largely its contractility; voluntary micturition very incomplete and catheterism difficult from prostatic obstruction. Suprapubic exploration showed an enlarged left lobe and a bar connecting the lateral lobes three-fourths of an inch high and one-half of an inch broad; this was found by trial to be the obstacle to catheterism. A portion of the enlarged lobe and of the bar was removed by cautery, after which the catheter entered the bladder readily. Eight weeks after operation catheterism had become as difficult as formerly, the obstruction being located at the same point; voluntary urination was not restored. Guyon believes that the loss of substance in the bar made by the cautery had been filled in by new tissue; and that the prolonged pressure of a perineal tube (à la Harrison) would have averted this result.

McGill reports two nearly duplicate cases in which the prostate is described as "very hard; a small projecting middle lobe blocks up the urethra like a bar. A small piece the size of a pea was removed (suprapubically) with difficulty." The patients derived no appreciable benefit from the operation. The conjecture seems warranted that Guyon's and McGill's cases belong in the same category as Schmidt's; the suprapubic operation removed but part of the obstruction, the remainder being accessible from the perineum only.

In a patient forty-nine years old a mass about the size of a walnut

was enucleated from the left lobe after suprapubic incision. The finger inserted into the urethra detected a small mass in the floor of this channel which obstructed a catheter, but could not well be reached from the bladder. The *boutonnière* was accordingly made; the finger introduced from the perineum met the same obstruction. This was incised preparatory to a thorough stretching of the prostate, when the finger, again introduced from below, unexpectedly dislodged the mass and pushed it into the bladder. It was found to be a small, distinct tumor.

Since the operation (four months) voluntary and complete evacuation of the bladder has continued, and the catheter enters easily. This patient had been advised more than a year previously to use the catheter regularly, but because of the difficulty and pain of introduction had made but desultory use of the instrument; urination, though voluntary, had been very incomplete.

It seems, therefore, that by suprapubic incision alone the surgeon may find himself unable to restore the patency of the urethral channel; that the intra-vesical projections may in a given case constitute but a part of the prostatic obstruction; that the discovery and removal of such outgrowths are not necessarily a complete operation. The prostatic urethra should be stretched and explored by the finger; and the discovery of a hard mass or an unduly rigid ring should be the signal for perineal urethrotomy, incision or excision of the resisting tissue, and thorough stretching. Kümmell supplemented the suprapubic excision of tumors by sinking the cautery into the prostatic substance—an imperfect substitute for the perineal operation. It seems probable that the combined operation by both suprapubic and perineal incisions will become the rule rather than the exception; the addition of the *boutonnière* increases but slightly the injury to tissue and the time of anæsthesia, while it affords an access to the entire prostate which may convert an utter failure into a complete success.

Results.—An estimate of the value of radical operations must be based upon a comparison with the results of simple drainage of the bladder; since the latter is included in the former and alone secures cessation of existing cystitis, subsidence of the congestive œdema of the prostate, and an improvement—more or less temporary—in the evacuation of the bladder. The radical operation should accomplish more; it should restore voluntary and complete urination in the individual who has long been largely or entirely dependent upon the catheter. For this estimate many of the 133 reported cases are useless; for in some the previous and subsequent history is not recorded; in others the operation was made for acute retention without previous dependence upon the catheter (where simple drainage would have afforded relief); and in a third class the prostatic enlargement was complicated with a calculus,

to whose removal the recovery of the vesical function might be largely ascribed.

Excluding these, there remain 41 cases wherein the catheter was indispensable for periods varying from several months to seven years prior to operation. In 32 of these 41 voluntary urination was restored and maintained during the period of observation, varying from a few months to two years; in only a few is it, however, definitely stated that the evacuation of the bladder was complete as well as voluntary; in several residual urine was noted and the daily passage of the catheter was advised as a precautionary measure. In 9 of the 41 cases voluntary micturition was not restored. As elsewhere observed, it seems probable that the failure in some of these was due to incompleteness of operation.

The mortality of prostatectomy (13.6 per cent.) seems somewhat greater than that of cystotomy in elderly men for other purposes, particularly the removal of calculi; though due to the same causes—uræmia, shock, and irritation of the respiratory tract by the anæsthetic. In other words, the hazard of the operation is entirely due to the preëxisting disease of the urinary tract as well as to the enfeeblement of vitality from age and protracted suffering; and its excess of mortality over lithotomy must be ascribed to the greater delay in operating. In only one case was serious disturbance caused by the local interference with the prostate: Dittel, after removing a median growth with the écraseur, observed suppuration in and around the prostate; the abscess was opened from the perineum by separation of the rectum, after which the patient recovered.

The obvious deduction is that the operation should be performed earlier in the course of the disease, and not as heretofore deferred until the last stage: corroboration of this inference is found in the paradox that operations upon the prostate, complicated with calculus extraction, furnished a much smaller mortality (1 in 26 suprapubic, or 3.8 per cent.) than the uncomplicated prostatectomies (11 in 63, or 17.5 per cent.). A calculus was, therefore, an advantage rather than an injury, since its presence led to early operation.

It is also noteworthy that among the cases complicated with calculus the recovery of voluntary urination is much smaller (52 per cent.) than among the uncomplicated operations upon the prostate (81 per cent.). The explanation, though conjectural, seems to be that the removal of the stone was the principal object; the prostatic operation was usually a mere incident, negligently performed.

Opportunity is still lacking—because the operation is so recent—to determine decisively whether the restoration of voluntary urination is permanently assured; further experience must show whether new tumors may not frequently develop from the unexcised prostate, causing a recur-

rence of the original morbid condition. Actual observation on this point is limited as follows: (1) In twenty-four cases unobstructed urination and catheterism have persisted for periods ranging from six to thirty-two months after removal of prostatic obstacles; (2) in two cases actual inspection of the bladder three months after operation (Kümmell, M. Schmidt) showed no further tumor-formation.

On the other hand, B. Schmidt observed at an autopsy, nine months after the removal of a median enlargement, that a new growth had appeared near the site of the one removed; the description strongly suggests a malignant tumor rather than a prostatic myoma, but no microscopical examination is recorded. An important deduction from these considerations is the indication for thorough enucleation of all circumscribed masses within as well as above the general prostatic surface. Such tumors can be enucleated after incision of the mucous membrane with surprising facility; McGill especially has demonstrated the feasibility of this measure in many cases of his extensive experience. Vignard, experimenting upon the cadaver, corroborates this observation; he asserts that in six out of ten cases he has enucleated the entire prostate—hypertrophied or otherwise—with reasonable ease.

A second cause may in time abolish the restored voluntary urination, namely, the supervention of vesical degeneration and loss of contractility. Yet this possibility constitutes an argument for, rather than against, the operation, since the necessary catheterism is facilitated thereby.

The abstract utility of prostatectomy is as yet clinically restricted by the fact that so many patients requiring the operation are when they reach the surgeon too feeble to endure it. For this reason the writer has, for example, refused to advise the operation in several cases; made simple drainage by perineal urethrotomy in five (with one death); and in four others (two fatal), in which the suprapubic incision was imperative for the extraction of a calculus, has declined to interfere with prostatic tumors whose removal presented no mechanical difficulties—simply because the enfeebled condition of the respective patients forbade all operative measures that were not absolutely necessary for immediate relief. In time patients will be educated to the knowledge that danger lies not in the operation but in the delay whereby the urinary organs are disorganized.

Choice of Operation.—The various operations mentioned represent as many stages in the development of surgical conceptions as to the nature and accessibility of the prostatic obstacle. The operations of Mercier and Bottini may doubtless, by a happy chance, secure occasionally complete success, though inapplicable to most cases; perineal incision and excision of prostatic obstructions have a wider range of usefulness, seriously restricted, however, by the mechanical difficulties in the detection and removal of the common intra-vesical growths; suprapubic cystotomy

affords satisfactory access to these frequent tumors, but sometimes fails to clear the obstructed urethra; the combined suprapubic and perineal approach seems alone to fulfil every indication in every case. There is, therefore, from the anatomical standpoint, no choice of operation; suprapubic cystotomy, with or without a supplementary *boutonnière*, as the peculiarities of the prostate in a given case may require, is in the abstract *the* operation.

Yet the interests of the patient will, doubtless, sometimes be better served by a compromise with the requirements of his prostate; perineal prostatotomy is perfectly free from anatomical dangers, and, because so quickly completed, involves less peril from the anæsthetic. It is, therefore, safer (mortality 9 per cent. against 16 per cent. by suprapubic prostatectomy); it affords temporary relief in all cases and a radical cure in a fair minority—for which reasons it should, in the writer's opinion, be the operation of choice in feeble patients.

Considerations of Technique.—As to the technique of suprapubic cystotomy, it needs only remark that the Petersen rectal bag has been quite largely abandoned and the modified Trendelenburg position adopted for eliminating the peritoneal fold from the field of operation. The transverse incision of the soft parts and Helferich's partial resection of the symphysis seem to be regarded as unnecessary features. The extreme distention of the bladder formerly considered an essential safeguard is no longer practised, since with the patient in the inclined posture an almost empty bladder can be opened with safety.

An important advance in the removal of prostatic obstruction is the enucleation of all accessible masses in the substance of the organ instead of a simple levelling off of projecting tumors by scissors or cautery; by this means not only the salient middle lobes, but also the no less obstructing, though less obtrusive lateral enlargements, are easily removable. This process of enucleation obviates the necessity for the operation suggested by Dittel, under the title of "lateral prostatectomy."[1] After emphasizing the importance of the neglected lateral lobes in the induction of retention, and criticising Harrison's plan of treating them by prolonged pressure as inefficient, Dittel shows that they can be reached by separation of the rectum from the prostate; and by operation upon a cadaver with lateral enlargement of the prostate, he proved that the excision of portions of the lateral lobes from the rear—without opening the bladder—relieved the prostatic obstruction by permitting the vesical surfaces of these lobes to fall apart. He admits that suprapubic cystotomy would also often be necessary for the removal of intra-vesical obstacles; and that the two operations, even if separated by an interval of weeks, would rarely be sustained by the same subject until patients

[1] Wiener med. Woch., No. 19, 1890.

are educated to submitting to them at an early stage of prostatic disease.

Dittel makes no allusion to the fact that the lateral lobes can be and have repeatedly been removed by enucleation after suprapubic cystotomy. Of the several surgeons who have independently adopted this measure McGill deserves especial mention; in several instances he has enucleated lateral masses weighing from one-half to two ounces. The ingenious operation suggested by Dittel seems, therefore, to have been anticipated by a much simpler, safer, and more practicable means of attaining the same end.[1]

Prolonged retention of a tube in the perineal wound, as advised by Hrrrison, has been attended in his and other hands with one unpleasant result—the persistence of a permanent and obstinate fistula.

Wishard, of Indianapolis, has successfully practised a means for obviating this objectionable sequel: When the tube is finally removed he curettes the granulating surfaces, incises the anterior and posterior angles, and closes the entire wound by sutures, drawing the urine by catheter for several days. By this means he secured immediate and complete union after drainage for periods up to eighty-one days. (Personal communication.)

Summary of Table.

To economize space, the writer's original intention to print the tabulated cases, has been deferred.

		Restoration of voluntary urination.		Deaths.	
		Successes.	Failures.	Within 15 days.	15 to 30 days.
Perineal operations, 41	32 uncomplicated	14	4	3	0
	9 complicated with calculus extraction	3	3	1	0
	Totals	—17	— 7	— 4	— 0
Suprapubic operations, 88	62 uncomplicated	21	5	7	3
	26 complicated with calculus	8	7	2	0
	Totals	—29	—12	— 9	— 3
By combined incision, 4		3	0	0	1
Totals, 133	Totals	—49	—19	—13	— 4

Period of observation after operation during which voluntary urination was maintained (in no case did catheterism again become necessary:

In 7 cases	2 years or more.
" 5 "	18 months to 2 years.
" 3 "	12 to 18 months.
" 9 "	6 to 12 months.
" 5 "	under 6 months.

[1] At the recent Berlin Congress, Kuester stated that he had in two cases successfully performed the operation as suggested by Dittel.

Results of operation in cases in which the catheter had been indispensable and constantly used for periods varying from a few months to ten years prior to operation:

	Recovery of voluntary urination.	Failure.	Incomplete recovery.	Total.
Perineal operations	13	7	0	20
Suprapubic operations	22	11	2	35
Combined operations	3	0	0	3
Totals	38	18	2	58

Same without calculus or other complication; catheter indispensable for periods varying from six months to seven years prior to operation:

	Recovery of voluntary urination.	Failure.	Total.
Perineal operations	11	4	15
Suprapubic operations	18	5	23
Combined operations	3	0	3
Totals	32	9	41

Causes of death.	Within 15 days.	Between 15 and 30 days.
Shock	4	0
Uræmia (surgical kidneys)	4	2
Pneumonia	2	0
Bronchitis	1	0
Iodoform	1	0
Not specified	2	0
Exhaustion	0	1
Totals	14	3

Form and location of prostatic growths removed:

Median tumors	37	Collar enlargements	7
Lateral tumors	9	Horseshoe enlargements	3
Median and lateral tumors	5	Diffuse enlargements	2
		Total	63

SOME OBSERVATIONS ON THE TREATMENT OF CROUPOUS PNEUMONIA.

By Roberts Bartholow, M.D., LL.D.,
of Philadelphia.

The treatment of pneumonia varies with the theories of its nature and pathology held by therapeutists, but can be resolved into three distinct kinds:

1. The expectant method, which consists in the use of remedies of a non-perturbating kind, so that, whilst the natural course of a disease is

not interfered with, a favorable termination is supposed to be brought about or promoted by their administration.

2. The symptomatic, in which the state of certain functions forms the basis of treatment, *e. g.*, the tension and rate of the pulse, the state of the respiratory system, the rate of breathing, the variations of the temperature, etc., and these symptoms guide the use of remedies for the conditions observed.

3. The third—the specific—is based on the existing knowledge of germs and of their relation to disease-production. The medicinal agents called *antiseptics* have the power to destroy pathogenic organisms without seriously hurting the tissues in which these bodies find a nidus. On first view, it would seem that no remedies can act more certainly; and that the only rule necessary to guide the administration is—the organism present, what antiseptic will effect its destruction? In actual practice we do not find that the result is so easily arrived at. When a pathogenic organism has entered the system, its position, diffusion, and products are not easily ascertained and reached, indeed, if some of them ever become accessible to the most powerful antiseptics in use. Again, microbes may have gained access to the remoter parts of the system, may have attacked and destroyed the tissues in which imbedded, and have ended their brief period of physiological life before the symptoms characteristic of their presence are recognized. In such instances we may have to encounter not the microbe and its progeny, but those toxic products it is their function to produce.

In the method for treating pneumonia now submitted to the medical profession I employ the several remedies partly—indeed, chiefly—in accordance with the specific plan, an outline of which has been briefly sketched. That is to say, the remedies most effective are supposed to destroy or inhibit the pneumococcus, and accomplish the object in proportion to the quantity of the parasiticide reaching the lungs. To do this implies the use of the remedy by inhalation. This remedy is *Ethyl Iodide*. The influence exerted by it on the cough, the labored breathing and general *malaise* is a remarkable fact. It has the signal advantages that no apparatus is required, it vaporizes at ordinary temperature, it causes no irritation of the mucous membrane, and it does not act as an anæsthetic. It can be given on a folded handkerchief, dropped in such doses as may be necessary, or it may be inhaled from a wide-mouth vial which has been gently warmed in advance. As full an inspiration as the patient can make is then practised, and the vapor, thoroughly diffused through the air, glides into the ultimate air-sacs, whence, also, it passes into the blood.

The physiological actions of ethyl iodide are antiseptic and depurative or eliminant. It has some germicide power, there are good reasons for believing, but it does not stand amongst the more effective. There are

instances of parasiticide effect exerted by the weaker antiseptics against the most resistant microbes, and *vice versâ*. The bishop bacilli, therefore, may find ethyl iodide especially repugnant or inimical to them, whilst far less resistant organisms, or some apparently so, cannot be overcome except by the most powerful antiseptics. In this question we have an illustration of peculiarity or idiosyncrasy, and not some exercise of power which would seem to be an expression of intelligence guided by will. The effects of ethyl iodide are both local and systemic—locally on the parts impinged upon in entering the system, and systemic in that, diffusing into the blood, it is necessarily conveyed to all parts. The local action may be referred to its chief constituent—iodine, often called *alterative*—a misleading word.

What explanation soever may be true of its action, all of the cases were apparently much benefited by the inhalation, and all expressed a sense of relief to the general *malaise*, and to the specific symptoms, cough, bronchial irritation, and expectoration—the last mentioned being soon changed in character and in quantity.

The manner of conducting the inhalation consisted in dropping the requisite dose (♏ xx–℥ss) on a folded handkerchief lightly laid over the mouth and nose, by the patient if able to do so, or by the nurse when necessary. No complaint was made of the action except some dizziness, and this occurred in a few only.

Calomel has proved to be a remedy of exceptional value in my cases, but it must be given judiciously. Three grains at a dose two or three times at the outset of the disease have been sufficient. The effects have been antiseptic, hepatic, and antipyretic. The grounds for its administration in croupous pneumonia are the following:

A dose of three grains acts freely on the intestinal canal; the biliousness present in all cases of true croupous pneumonia is much diminished, the febrile temperature declines, and the dryness and heat of the surface are replaced by a refreshing moisture. The very obvious relief thus afforded is not permanent, but the administration of another dose in a day or two will serve to maintain the beneficial effects of the first; and a third dose may be given if required. I have not in the four cases, the basis of these observations, exceeded in any case two doses; but I am aware that three might be required.

If it is asked how calomel can effect such important changes in the morbid complexus, I find the reply is—its influence on the liver and its power as an antipyretic. It has long been known that calomel acts on the hepatic functions, relieving the so-called "*biliousness*." Now, as biliousness implies over-production of bile, and therefore an irritative state of the hepatic cells and parenchyma, it follows that calomel does not increase but lessens the over-action, or in ordinary language, lessens the biliousness, and by an action which is wholly reflex causes more bile to

appear in the stools. Experiment here coincides with clinical observations. Recent investigations, both in animals and in man, have demonstrated that calomel lessens the production of bile, and by its purgative action, reflexly, causes the bile stored up in the ducts and in the gall-bladder to flow into the intestines. I do not find anywhere a reference to the state of the liver, as playing the part of one of the factors in causing the high temperature of pneumonia. It seems to me that the true explanation is the following: It is a well-known fact that the blood of the hepatic veins is much higher in temperature (two or three degrees) than the blood of the portal—thus showing that the chemical processes taking place in the liver have the effect to raise the heat of the mass of blood in the organ, and soon after, of the whole mass in the circulatory system. It follows therefore from this, that an agent acting as calomel on the functional processes of the liver, must lower the heat-production also. In these facts, do we not have an explanation of the mode in which calomel acts as an antipyretic in croupous pneumonia, in which the condition of the liver is one of increased action and overproduction? As to the production and disposition of the glycogen of the liver, in croupous pneumonia, nothing is known; but it is a reasonable presumption that it is produced in greater quantity, in a ratio corresponding to the increase in the amount of bile. As glycogen has been found everywhere in the body, and as it is a material which by oxidation furnishes force, including heat, it is clear that an increased amount of this substance serves to raise the temperature. The lessened chemical activities in the liver mean, therefore, a diminution of febrile heat of the body generally.

A not uncommon symptom in the course of croupous pneumonia, during the highest range of the temperature, is delirium. Some peculiar mental disturbances occurred in my cases—such as confusion as to time and place; and although in no instance was the delirium wild and maniacal, there was considerable mental disturbance in two instances. When wakefulness is also present the most effective remedy is chloral, and indeed as this medicament has some peculiar powers, it should be made use of early rather than its administration be postponed to a later time. It was shown originally by Dr. Benjamin Richardson, I believe, that chloral has distinct power to dissolve the fibrin masses and exudates. Excepting the dangers of its use, there is much to recommend chloral as a remedy for the results of inflammatory action. It has always seemed to the writer that its action in pneumonia was peculiarly favorable, and that smaller doses were effective relatively more than is usually found to be the case in other maladies.

Something must be said of bloodletting in the treatment of pneumonia. It must be very rarely necessary to practise venesection, but I am clear that the application of leeches is often desirable. In two of

my cases I had leeches (six Swedish, to fill and fall off) applied with the effect to relieve the pain in the side and to give general relief. The other cases seemed not to require them and certainly did as well. Had there been such a condition of the general circulation and of the respiration as had indicated it, I would not have hesitated to practise venesection.

The subject of nutrition, or support of the powers of life, has been regarded of prime importance in the treatment of croupous pneumonia; but I am convinced too much attention has been given to the matter and the patient's condition rendered more perilous by overfeeding and misuse of stimulants. We have to note in the first place that there is not only no appetite, but a complete disgust for food when offered. Usually we find that which our French *confrères* call a saburral state of the mucous membrane of the stomach, in which a tenacious, gray mucus lines this viscus, the tongue is heavily coated, the breath fœtid, and the excretions diminished. To force on the unwilling stomach a quantity of food and stimulants is to contribute to the distress and to lessen, rather than promote, assimilation. Large draughts of cold milk swallowed greedily because of thirst rather than for food, also discommode the patient by pushing up the diaphragm against the laboring respiratory organs, and so much impinge on the solar plexus as to affect the heart through the ready reflexes proceeding from these nerves of animal and organic life. A course which seems to me far more useful than the usual conventional way of forced feeding was pursued in these cases. I am well assured that food should not be given more frequently than once in three or four hours, for the reason that this is the minimum time for the completion of stomach digestion. If fresh, bulky, and cold aliments be thrown into the laboring stomach when already occupied in digestion, the time and manner of the process are altered and become irregular, so that the peptones are not formed until the intestinal digestion is accomplished, and necessarily imperfect products result. Under such conditions the nutrition of the patient is not improved. I find it far better to give the proper foods at intervals of three to four hours, as I have stated, and the much-dreaded depression and failure of the vital powers have not been seen. Such simple aliments as milk, mutton or chicken broth, are the most suitable, and even these must not be forced on the patient too strongly. Let his own inclination have a voice in the matter, although the error of permitting a serious decline for lack of aliment must not be committed. When the time or character of the case presages a decline in the vital forces, stronger aliments and a moderate amount of stimulant will be necessary. I have used whenever the patient's tastes allow, egg-nog fortified with whiskey or brandy to the extent of one to four ounces in twenty-four hours, and have not gone beyond this. In the four cases here narrated no more stimulant

or stimulating food were found necessary than the egg-flip during the period of maximum depression.

I must now narrate the cases, four in number, on which these observations are based. One swallow does not make a summer, nor do four cases of pneumonia settle the questions connected with its treatment; but they surely afford valuable indications.

Three of these cases succeeded to influenza, and one occurred anteriorly to that epidemic.

CASE I. was that of a pharmaceutical manufacturer, a man of about fifty-four years, medium height, slender, and inheriting the tubercular constitution, but he has gone on through life successfully without serious impairment of health at any time. He came home from his club late on a certain Saturday night, or rather about 2 A. M. on Sunday morning, and went into a warm bath, where, it appears, he fell asleep, and continued so until aroused by his wife who became alarmed at his protracted stay in the bath-room. He had a violent rigor on awakening and high fever succeeded to the chill. Throughout the next day he had much fever, pain in his right chest, considerable embarrassment of breathing, cough bringing up some blood and mucus. I saw him on Monday, when his symptoms continued as already described, he was very restless, had a temperature of 104° F., pain in the right side, catching respiration and cough, with the characteristic sputum of croupous pneumonia. His eyes were brilliant, his face flushed, and his expression anxious.

The whole inferior lobe of the right lung and the adjacent pleura and part of the middle lobe were consolidated and presented the usual physical signs of that condition. Bronchitis was universal. The action of the heart was rapid, but well sustained. Six leeches were applied to the chest, allowed to fill and fall off, and a powder containing three grains of calomel was given. A teaspoonful of paregoric at intervals was advised for the cough. Much relief was experienced when the calomel acted; the skin, previously dry, yellow, almost jaundiced, grew moist and lighter in color, and the general distress was notably lessened. On the following day the temperature continued high (103.5° F.), and delirium was observed at night. For the cough, especially, ethyl iodide by inhalation was ordered, and chloral was prescribed to procure sleep at night. These remedies were continued to the period of crisis on the seventh day, crisis or lysis being the mode of cessation of the pulmonary inflammation, and the beginning of convalescence, as all the world now knows.

I need not take up time and space with the giving of every detail. It will suffice to say that the inhalant was continued up to the end of the case; calomel was given twice, and the chloral to remove the delirium and procure sleep for six days—the dose being twelve grains.

The crisis occurred on the seventh day, and although the convalescence was rather slow, it proved to be complete, and the patient was restored to health, becoming stronger and stouter than ever before.

Case II. occurred in a gentleman seventy years of age, of rather feeble health. He was a professor in a public institution and had always led a sedentary life. He had an attack of the prevailing influenza, and as this was about to cease he began to have distress of breathing, pain in

the side, and characteristic rusty sputa with a less viscid fluid composed of mucus and blood like ordinary "prune-juice" expectoration.

As the patient had had several attacks of pseudo angina pectoris, and irregular action of the heart, I much feared the results of the new seizure. He did surprisingly well. Lysis—not a severe one—began on the fifth day, and convalescence immediately set in. Notwithstanding his age and apparent feebleness he took but little aliment, which was first of milk and afterward reinforced with some mild egg-nog. He had a three-grain dose of calomel—only once—ethyl iodide was regularly inhaled, and a teaspoonful of paregoric was given occasionally to moderate the cough.

Like the other two cases to be narrated presently, this patient had not recovered from his attack of influenza when the pulmonary inflammation began, and the characteristics impressed by the epidemic on the pneumonia in no way lessened the severity of the disease. I have little doubt that this so-called sequela is really one element in the morbid complexus—just as much necessary to the full picture of the malady as the catarrh of the nares and fauces.

The third case occurred in a gentleman from the South, an ex-governor, a member of congress, and an active politician. He was then fifty-six years of age, very stout but flabby, got out of breath on slight exertion, and there was much irregularity of the heart's action. It was for this condition of his heart that he came to consult me. The influenza epidemic was then at its highest, and in a few days he became ill with a well-defined attack. Pulmonary troubles quickly ensued, and a considerable extent of the right lung—all of the lower lobe—became consolidated. The temperature ranged between 102° and 104° F. He had mild delirium at night and some confusion of mind during the day. His cough was troublesome and the expectoration was of the "prune-juice" variety, with, however, some characteristic sputa of croupous pneumonia. The attack terminated by lysis beginning on the seventh day, and was marked, also, by some critical phenomena, as a profuse diarrhœa coming on suddenly. His recovery proceeded rapidly after this occurrence and no sequela remained.

The patient was treated on the same general plan as the other cases, and I need not, therefore, enter into details on this point.

The fourth was the most formidable of the series. A lady of sixty-four years, stout, even obese in body, and a victim of chronic malarial poisoning, was attacked in New York with the prevailing influenza, and having been a patient of mine in former years came to Philadelphia to be under my care. She was then suffering with the local symptoms in a severe form. In addition to the acute catarrh of the broncho-pulmonary mucous membrane, Mrs. S. suffered extremely from an acute catarrh of the left middle ear. This caused rupture of the drum at an early period—fortunately—and an enormous discharge of a sero-purulent and mucous fluid occurred up to the end of the disease. On the night of the second day after her coming to Philadelphia she had the

usual violent rigor, followed by a pneumonia involving the lower lobe of the right lung and nearly half of the middle lobe. An extensive bronchitis, including the larger divisions of the tube, accompanied or rather preceded the lung inflammation and added to the distress of breathing, at the same time causing a most frequent and painful cough. The ethyl iodide gave great relief to the cough, and as in the other cases, seemed to modify the usual complexus of pneumonia, lessening the violence of the symptoms, and promoting a favorable termination by lysis. The usual effects of calomel on the symptoms referable to the liver, were results of its administration in the three-grain dose, and the diuretic and diaphoretic action were very decided also.

None of these cases left any after-trouble, although Mrs. S. had some highly significant symptoms of the chronic malarial toxæmia, from which she was not free when she went into the influenza. This manifested its usual tertiary tendency, but the more decided antipyretic doses of quinine quite failed to "break up" the seizures. Then I resolved on the administration of pilocarpine, and had results therefrom quite happy and unexpected—for although it has been given to arrest intermittent fever, the use and effects were restricted to the substitution of the sweating for the chill-stage. In such instances the agent was supposed to have a curative effect, by suppressing the other stages; but in the case under consideration the remedy was employed as the one suitable to arrest the whole morbid process. The pilocarpine was taken at night on retiring, for several weeks, and the usual salivary and cutaneous flow took place. The result was, the patient experienced no depression of the vital powers, had an excellent night's sleep, and on the following day was in good condition throughout, the manifestations of malarial toxæmia having wholly ceased after the medicine had been administered for a week.

The influenza pneumonia was not a typical pneumonia—and it varied from the normal type in several directions. The termination in favorable cases was by lysis and not by crisis; the febrile process was in a less active form; all the physical and rational signs were much less pronounced, but the mortality was larger—the mode of dying being by heart-failure.

The treatment of pneumonia as above outlined is submitted to my colleagues of the medical profession with a view to further clinical observations. My own experience, although so satisfactory, is on too limited a scale to justify a final conclusion in regard to the real value of the plan. Many cases in the hands of physicians living under the most varied conditions must be treated in the way proposed if an accurate judgment is to be finally rendered.

PRESYSTOLIC APEX-MURMUR DUE TO AORTIC REGURGITATION.

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Case I.—Henry H., aged twenty-one years, was admitted into St. Mary's Hospital, under the care of Sir E. Sieveking, on April 30, 1887, suffering from extreme anæmia after severe and repeated epistaxis. The notes of his case were taken by Mr. O. E. Higgens, M.A. He had had chorea nine years before, and rheumatic fever six years before; he was then told that his heart was affected. After his recovery he seemed in good health and was able to work hard; for ten months he worked as a navvy on a railway in Canada. During the last two years he had been a French polisher, and had found no difficulty in doing his work until lately. Seven weeks before admission, while polishing a floor on his knees and with his head low, his nose began to bleed. This continued for nine hours, and it had frequently recurred for short periods. Of late also there had been a little shortness of breath. On admission, he was found to be very thin and extremely pallid. Pulsation was visible in all the superficial arteries. Pulse 100, sudden, forcible, collapsing. The area of cardiac dulness was much increased, and the impulse diffused and visible. Four murmurs could be heard: at the base a systolic and a loud diastolic, at the apex a *presystolic* and a systolic. The liver was enlarged, the urine albuminous with hyaline casts and a trace of blood. The lungs were normal. Temperature ranged between 98.4° and 99.8°.

A few days later it was noticed that the presystolic murmur occupied a considerable part of the diastole, and became of a higher pitch at the end, running up into the systole. But on May 9th it was recorded that "the presystolic murmur observed for several days cannot be distinctly made out to-day," though the aortic murmurs were loud. On the same date the spleen was felt, just below the margin of the ribs, and some fine crackling sounds could be heard in the left lower axillary region: the patient had complained of a sudden sharp pain in this region the day previously, and the temperature had risen to 101°. The urine was pale, clear, acid, of specific gravity 1012; it contained albumin, granular and blood casts, and blood-corpuscles, though not in sufficient amount to color it. Next day (May 10th) a very large increase of the splenic dulness was noted, and the spleen was felt below the ribs, its lower limit being one inch above the level of the umbilicus. The presystolic murmur was still absent, and the systolic mitral had developed a distinctly musical character which it had not possessed before. But on the 11th the presystolic was again detected, and on the 19th it was distinct, while the systolic had vanished, the first sound at the apex being now short and sharp. Another attack of pain in the left side had occurred and the spleen was larger.

I first saw the patient on May 23d, on succeeding Sir E. Sieveking in charge of in-patients. There were then a double aortic and a presystolic mitral murmur, but the systolic mitral murmur could not be heard.

The first sound was short at the apex, the second absent. The treatment consisted of 15-grain doses of sulphocarbolate of sodium every four hours, and this was continued. A few purpuric spots developed on the patient's legs, but on the whole his condition gradually improved; the epistaxis ceased to recur, his strength increased, and at the end of June he was so much better that he was allowed to be up. The improvement continued and on July 10th he was permitted to go home.

On July 27th he was readmitted on account of recurrence of epistaxis. On August 1st I made the following note: "Heart's impulse wavy and diffused over a wide area, most marked about three fingers' breadth below and two to the outer side of the nipple. No thrill, but over the apex-beat there is a well-marked presystolic murmur continued to the systole; this cannot be heard to the right of the nipple-line. At one point, just outside the impulse, a presystolic murmur and first and second sounds can be heard. Further to the left no murmur is audible, but a short forcible first sound followed by a second. The aortic diastolic murmur is loud at the base and is conducted downward more toward the apex than down the sternum; it is audible nearly to the nipple-line, but is not audible at the xiphoid. Pulse highly characteristic of aortic regurgitation." On the evening of this day he had another sudden attack of pain in the splenic region. A week later I noted that "the aortic diastolic murmur can be traced obliquely downward to the fifth rib, about one finger's breadth to the inner side of the nipple-line, and immediately below this the presystolic murmur commences."

He was again treated with sulphocarbolate of sodium, and with dialyzed iron, but his strength gradually failed. Recurrence of epistaxis, diarrhœa, and increasing feebleness brought the end on September 4th.

The post-mortem examination was made the next day by my colleague, Dr. Maguire. The pericardium was adherent to the heart throughout by fibrous bands, and some similar bands passed from the front of the pericardium to the under surface of the ribs. The heart was much enlarged, especially the left ventricle. *The mitral orifice admitted three fingers*, the tricuspid four. All the cavities contained post-mortem clot, and adhesive ante-mortem clot was also found in the right auricle and in both ventricles. The pulmonary and tricuspid valves were normal. On the right posterior cusp of the aortic valve and immediately below it were fresh vegetations with ulcerations. All the cusps were thickened from old endocarditis. Below the anterior cusp was a large vegetation of fibrin adherent to a roughened inflamed surface of endocardium apparently not ulcerated.

The mitral valve-flaps were similarly thickened, and on the auricular surface of the anterior flap at its middle portion, and also on the chordæ tendineæ were patches of recent endocarditis without ulceration. The lungs were congested and œdematous. There were some old fibrous adhesions at the base of the left pleura. Liver large and firm. Spleen much enlarged, weighing fifteen ounces, its surface mottled with small white spots. It contained a yellow infarct of the size of a walnut. Both kidneys also contained small infarcts.

As this patient died during my autumn holiday, I was not present at the autopsy. Nine months later, however, I discovered that the heart had been preserved for the Museum, and had an opportunity of exam-

ining it with Dr. Maguire. The weight of the heart was now fifteen and a half ounces. We found that at this time the mitral orifice would not admit more than *two* fingers, and that with some little difficulty. Dr. Maguire, however, felt confident that the post-mortem record was correct, and that at the time of the autopsy the orifice admitted three fingers. Thinking that possibly the action of the spirit in which the specimen had been preserved for nine months might have caused some contraction, we examined another heart in the Museum, taken from a case of aortic aneurism with normal mitral flaps. In this case, the left ventricle being large, it is probable that the mitral orifice may have been somewhat dilated during life, yet we found that now after having been preserved in spirit, the orifice would not admit more than two fingers comfortably. It therefore seemed likely that in the other case there had been little or no stenosis, and that the post-mortem record was correct.

Case II.—James B., aged thirty years, admitted into St. Mary's Hospital under my care, October 10, 1889, suffering from dyspnœa and ascites. He was found to have a very large heart; the impulse could be felt four fingers' breadth below and five fingers' breadth to the outer side of the nipple in the anterior axillary line.

The cardiac dulness was extensive also in the upward direction, and involved even the manubrium and the first and second intercostal spaces at the left margin of the sternum. A loud, rough, systolic murmur was heard over the whole of this basic area, and in the second right interspace close to the sternum a very local, short, diastolic murmur was detected. In addition, the pulse-wave in the left radial artery was always smaller than that in the right. These symptoms had led to a diagnosis of aortic aneurism before his admission. Not the slightest pulsation, however, could be seen in the upper part of the thorax, and I was decidedly of opinion that the case was essentially one of aortic regurgitation. At the apex a double murmur was audible, which varied in character on different occasions. Sometimes it was systolic and diastolic, *at other times it was distinctly presystolic and systolic.* I noted, however, that the *presystolic* murmur when it occurred, was of a blowing not rumbling, character, and was short. At the xiphoid a tricuspid systolic murmur could be heard. The patient suffered from ascites and flatulence. The liver was enlarged, its edge reaching four fingers' breadth below the costal margin; it was firm and tender. Not much œdema of the legs. Urine of sp. gr. 1024, albuminous. The patient stated that he had never had rheumatic fever, though he had been troubled occasionally with "rheumatic pains." On the 26th of October he suddenly fell back dead.

At the autopsy it was found that the heart was very large, weighing thirty-five ounces with the contained clots, twenty-seven and a half ounces without them. The aortic valves were fused into a calcareous, rigid mass, occupying fully three-fourths of the orifice. An aperture of about the diameter of a cedar pencil remained; it was situated in the left half of the normal position of the orifice, so that the stream of blood regurgitating through it must have impinged on the anterior flap of the

mitral. *The mitral orifice admitted three fingers readily*, the flaps were healthy except for a very little atheroma of the base of the anterior one; they were not shrunken or deformed. The tricuspid and pulmonary valves were normal. Liver, nutmeg and fatty. Kidneys of normal size, capsules slightly adherent. About two inches of each radial artery was excised; they were equal in size, but while the vessel from the right side was normally round, that from the left side was distinctly flattened, as if it had long been only partially filled. It appeared that this must have been due to the aortic stenosis, the onward current of blood being directed mainly toward the innominate artery.

CASE III.—William M., aged thirty-one years, admitted into St. Mary's Hospital October 22, 1889. He had never had rheumatism. Twelve years ago he had a chancre and buboes. Three months ago he began to have pains in his stomach, worse after meals, and shortness of breath after exertion.

On admission there was orthopnœa, throbbing of carotids, yellowish complexion, much dropsy of legs and scrotum, and much albumin in the urine. Respirations 36; lungs normal, except for some moist sounds at the bases. The cardiac dulness was very extensive, from the right margin of the sternum to the left anterior axillary fold. The cardiac impulse was diffused, being seen and felt in the fifth and sixth interspaces, from one inch on the inner side of the nipple-line to two inches on its outer side. At the base a double murmur was heard, the systolic being conducted upward, the diastolic downward along the left side of the sternum, and loudest in the third space. At the point of maximum impulse, in the sixth space, two inches outside the nipple-line, systolic and diastolic murmurs could be heard, but to the inner side of the nipple-line, less than an inch below the nipple, and the same distance to the right of it, *a distinct presystolic murmur was heard. It was decidedly rumbling in character, but it did not increase in intensity toward its close, and did not run into a "snap."* This presystolic murmur was not invariably present, but it was heard three times at least during the twelve days during which he was under observation.

Pulse 108, somewhat collapsing in character, not full between the beats, and quite small in size. From this smallness of the pulse and the presystolic murmur I thought it probable that there really was mitral stenosis in this case as well as aortic incompetence, but the autopsy showed that the smallness must have been due to mitral regurgitation. Four days before death it was reported that his urine was of specific gravity 1015, free from albumin. He died November 3d.

Post-mortem: Heart very large, weight, thirty-five ounces; all the cavities dilated. Muscular tissue of heart normal in color, thickness, and consistency. The *mitral orifice admitted five fingers;* the mitral flaps normal, chordæ tendineæ normal. Aortic valves incompetent, cusps slightly thickened, but not much deformed. Aorta highly atheromatous in patches just above the aortic valves. Tricuspid normal. Pulmonary valve had only two cusps, but was otherwise normal. The lungs contained large hæmorrhagic infarcts in the lower lobe of each and the right middle lobe. Kidneys enlarged, each weighed ten ounces, capsule normal, surface smooth and pale. Liver enlarged (five pounds, one ounce), section fatty and nutmeg. Spleen, seven ounces, normal.

CASE IV.—William B., aged forty-five years, admitted into St. Mary's Hospital May 13, 1890. He had never had rheumatic fever. Stated

that he had not taken much alcohol, and that he had never had syphilis. His first symptom was swelling of the feet five weeks before admission. Dyspnœa had been present only for one week. On admission there was some orthopnœa. Pulse 100, collapsing, yet the vessel remained distended between the beats. The cardiac dulness extended to the nipple-line, impulse feeble. At the base a double murmur—systolic loud, diastolic not loud, and heard best in the fourth left interspace. The second pulmonary sound was accentuated. *At the spot where the apex-beat should normally be found there was a presystolic murmur, not long, but of a definitely "cantering" character. This murmur was very local; a little way to the left of this site it vanished*, and a systolic blowing murmur became audible. Liver much enlarged; no ascites. Catarrhal sounds generally over the lungs. The patient died six days after his admission.

Post-mortem: Heart weighed nineteen ounces. Left side empty. Right auricle not distended. Aortic valves quite incompetent and much diseased; the anterior and right posterior cusps were united along their margin, so that the regurgitant stream must have been directed toward the mitral valve. All the cusps were covered with warty vegetations, with some ulceration. *The mitral orifice admitted four fingers;* the tricuspid five fingers. The anterior flap of the mitral and its chordæ tendineæ were thickened, but not shrunken; the posterior flap was very slightly thickened. The pulmonary and tricuspid valves were normal. The spleen and kidney contained infarcts.

It was stated some years ago by the late Dr. Austin Flint, of New York, that in certain cases of aortic regurgitation a presystolic apex-murmur might exist without any stenosis of the mitral orifice. This statement has not met with much acceptance, and no reference to it is made in the latest edition of the text-books on medicine. In the interesting discussion on the "presystolic murmur, falsely so called," initiated by Dr. Dickinson in the columns of the *Lancet* in October, 1887, and carried on by Dr. Bristowe, Professor Gairdner, and many other distinguished physicians, it was assumed on both sides that whatever might be the true rhythm of the murmur in question, it is at all events pathognomonic of mitral stenosis. Even Dr. Gairdner only inserted in a foot-note the following rather sceptical reference to Dr. Flint's claim: "I will observe a similar reserve as regards Dr. Austin Flint's curious but exceptional experience of a murmur, apparently of mitral stenosis, going along with free aortic regurgitation, and with an uninjured mitral valve and orifice." Since that time, however, Dr. Gairdner has published in the AMERICAN JOURNAL OF THE MEDICAL SCIENCES for August, 1889, a case which supports Dr. Flint's view, for the autopsy showed that aortic incompetence was present, and Dr. Gairdner's statement implies that the mitral was normal, though he does not expressly say so.

In the *Medical Chronicle* for June, 1890, my colleague, Dr. Maguire, has given a summary of the cases supported by post-mortem proof of non-contracted mitral which have thus far been published. They are

nine in number—three by Flint, two by Guitéras, one by Steell, one by Gairdner, and two by Osler. He adds a detailed account of two cases, one of his own and one which was under my own care, and in which he made the post-mortem examination. In the former, a typical case of aortic regurgitation, "*about one inch inside and a little above the apex-beat, there was heard a presystolic murmur, not rough, but rather blowing, distinctly separated from the second sound, and terminated by a normal first sound. The murmur was heard over only a limited area.* . . . The presystolic murmur remained for a week, and was distinctly heard both by my colleague, Dr. Cheadle, and myself. The autopsy showed that the heart was greatly enlarged, weighing twenty-two ounces. All its cavities were dilated. The aortic valve was markedly incompetent; its cusps much thickened and shrunken. The thoracic aorta was extremely atheromatous and thickened. *The mitral orifice admitted easily three fingers.* The anterior flap was slightly thickened, and while its auricular surface was smooth, its ventricular surface was very slightly roughened. The posterior flap was normal, and the chordæ tendineæ were neither thickened nor shortened.

The second case was one of great pathological interest, and I therefore quote Dr. Maguire's account of it in full:

H. S., aged fifty five years, was admitted into St. Mary's Hospital on October 21, 1887, under the care of Dr. Lees, who has kindly given me permission to make use of the case. He had never had rheumatism, had lived in London all his life, and had drunk spirits and beer to excess. He had suffered for four or five months from dyspepsia and pains in various parts, and these had increased up to the time of admission. Suppressing the immaterial details, I may relate that on examining the heart there was seen a very diffused apex-beat, but the true apex seemed to be in the fifth interspace slightly outside the nipple-line. There were evident signs of cardiac dilatation affecting both the right and the left sides. At the aortic cartilage the first sound was weak, the second accentuated. At the fourth left interspace, near the sternum, was heard a diastolic murmur carried downward to the ensiform cartilage. *Just below the nipple a short presystolic murmur was heard*, blowing in character, and heard not quite so distinctly at the cardiac apex. The pulse was collapsing and short, and capillary pulsation was very evident. On October 26th it was noted that the presystolic murmur was much rougher in character; that it led up to the first sound, and that it was now heard two fingers' breadth outside the nipple. On October 29th no presystolic murmur was heard. In the nipple-line there was found a sharp first sound, a short systolic murmur, and a short diastolic murmur. On October 31st in the fourth left interspace near the sternum, a short systolic and a rather long diastolic murmur were heard, but no presystolic murmur was found anywhere. At the cardiac apex there was a short systolic murmur carried for a little distance into the axilla. On November 7th the diastolic murmur was conducted down to the apex. *Thus, while the main signs of the case were those of aortic regurgitation, a distinct presystolic murmur was heard for a short time near the cardiac apex.* I made an autopsy upon this case and found the heart greatly enlarged, weighing twenty-five and a half ounces, the enlargement being the more marked in the left ventricle. The aortic valves were incompetent and showed advanced atheroma, which had produced great shrinking of the segments. The sinuses of Valsalva above the right and anterior aortic segments were much pouched, and the artery around them was in an

advanced state of atheroma. In the wall of the posterior sinus of Valsalva an opening which admitted easily the little finger represented the orifice of the left coronary artery. The artery beyond this was transformed into a calcareous tube, somewhat larger in diameter than the opening mentioned by which it communicated with the aorta, and lay in the auriculo-ventricular groove until the anterior sulcus between the two ventricles was reached. Here the aneurism, for its nature was evident, ended by dividing into the ordinary branches of the coronary artery, which appeared to be of normal size and structure. The aneurism bulged, on its inner aspect, into the cavity of the left auricle above the anterior cusp of the mitral valve. The bulging at this spot somewhat diminished the calibre of the auricle, but it seemed to be quite clear of the cusps of the mitral valve and of the auriculo-ventricular orifice. The aneurism was empty. *The mitral orifice admitted three fingers easily.* On the anterior cusp of the mitral valve there were seen a few scattered patches of atheroma, but otherwise no abnormal appearance was noticed, and the chordæ tendineæ were healthy. All the cavities of the heart were dilated. Here, then, we had, in addition to the lesion of the aortic valve which caused its incompetence, an aneurism of the left coronary artery which caused a projection into the left auricle. Yet I think, on careful examination of the specimen, that this latter lesion could not in any way interfere with the flow of blood through the mitral orifice. Moreover, the extent of the projection could be well judged after death, for the extreme calcification of the aneurism would entirely prevent any further expansion of the vessel during life. The case seems to be truly a companion to that previously described, and thus we have two examples of presystolic murmur without mitral stenosis, and apparently the result of aortic regurgitation."

I entirely endorse Dr. Maguire's description of this case and his remarks upon it.

Adding these two cases to the four which I have above narrated, and to the nine mentioned in Dr. Maguire's paper, we have fifteen cases by various observers in which a murmur of presystolic rhythm has been heard in cases of aortic regurgitation in which it has subsequently been proved by autopsy that no stenosis of the mitral existed. Cases without autopsy are of course worthless as proof, but they may be referred to as illustrations. Dr. Maguire quotes one of his own and another of Dr. Bramwell's, in which a presystolic murmur existed in a case of aortic regurgitation believed to be free from mitral stenosis. I have such a case under my care at present. It is a case of severe aortic regurgitation in a man of twenty-six, in which there is a typical double murmur at the base and also a rather loud systolic followed by a short diastolic at the apex. He has frequent anginal attacks. On several occasions I have heard a faint presystolic murmur to the inner side of the apex-beat, and a few days ago I noticed that it was distinctly present after the slight exertion of taking off his shirt, but that in a minute or two the rhythm changed into systolic and diastolic. On making him sit up in bed the presystolic murmur reappeared, to vanish again after a minute or two. I think it is reasonably certain that this patient has no mitral stenosis.

I have said above, "a murmur of presystolic rhythm," for it must be confessed that it does not usually simulate very closely the rumbling, can-

tering sound of the murmur of mitral contraction. It is usually short and rather blowing in character. But it may partake somewhat of the well-known quality, and in Case III. this circumstance, conjoined with the smallness of the pulse, led me to diagnose a stenosis which the post-mortem examination proved to be absent. In Case I. the presystolic murmur was long and quite typical, and was even reported to have been accompanied by a thrill (this, however, was not present while the case was under my own observation). It is unfortunate that in this case the condition of the heart nine months afterward threw some doubt on the accuracy of the record of the post-mortem examination. But if any stenosis existed, it must have been very slight, and the aortic regurgitation gave rise to the most extreme and characteristic symptoms. In the light of the other cases I have no doubt that the presystolic murmur was in great part, if not entirely, due to the aortic regurgitation. It is worthy of note that in this case there was a large vegetation below the anterior cusp of the aortic valve and vegetations also on and below the right posterior cusp; hence the regurgitant stream was probably mainly directed toward the left, and it would therefore strike the anterior mitral flap. Similarly, in Case IV., the anterior and right posterior cusps of the aortic valve were actually united along their margin, leaving the left half of the orifice alone patent, and in Case II. the pathological process had gone on to completely calcified union of the cusps, leaving again as patent opening only the left portion of the normal orifice. Hence, in all these three cases the regurgitant stream must have impinged on the anterior mitral flap, and there is no difficulty in seeing how this flap was in consequence thrown into vibrations when it was carried outward by the incoming current through the mitral orifice at the end of the diastole. For, "in full diastole" (to quote Dr. McAlister's account of the observations of Ludwig and Hesse, *British Medical Journal*, 1882, vol. ii. p. 825), "the flap and its cords are stretched aslant across the cavity. . . . The flap does not hang loosely down; it is stretched taut from basal ring to muscle-tip." Hence under the influence of two independent blood-currents impinging on its opposite sides vibrations are easily produced and give rise to a murmur during the ventricular diastole, more especially during its closing period, which corresponds with the systole of the auricle.

THE THEORY OF PYREXIA.

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During the last ten years much importance has been attached to the part played by the nervous system in the production of pyrexia. Many

observers have put upon record cases in point. Six years ago I published several such,[1] and have since, from time to time, mentioned others.[2] In America[3] Ott has given the profession some valuable material bearing on this question. Several experimenters have proved that in animals injuries of the nervous system will produce a rise of temperature, and in a recent paper[4] I have given references to all these experiments, and have shown that lesions of the corpus striatum and optic thalamus will, in rabbits, cause a great rise of temperature quite apart from the influence of the anæsthetic and the operation, but that lesions of the neighboring white matter probably do not influence the temperature. Dr. Goodhart[5] has published cases which he calls examples of innominate fever, and which he suggests are due to a functional disturbance of the cerebral heat-regulating mechanism, and I have recorded[6] some similar cases under the name of inexplicable pyrexia, and have also published an example of hysterical pyrexia.[7] In an article[8] on the neurotic theory of pyrexia, I tried to show that all pyrexia must be either primarily neurotic—that is to say, due to a lesion of the central nervous system, or the paths from it to the muscles, which are the chief thermogenetic tissues, an instance of this variety of pyrexia being that which is sometimes found associated with tumors of the brain; or it must be due to a reflex affection of some part of the heat-mechanism, probable instances of this are the rise of temperature produced by a small tense abscess, and that sometimes induced by the colic due to gall-stones; or it must be due to the stimulation of the nervous heat-mechanism or the muscles by the circulation of some poisonous products through them or through some part stimulation of which affects them reflexly. An instance of this form of pyrexia may be the rise of temperature which accompanies zymotic diseases and belladonna-poisoning; and possibly, also, sometimes the poison acts on some part of the thermolytic mechanism. In 1887, Dr. MacAlister, in his Gulstonian Lectures,[9] fully endorsed the view that the nervous system controls pyrexia. He pointed out that the mechanism probably consists of three parts. They are a heat-loss or thermolytic mechanism acting chiefly through the skin by the cutaneous vessels and sweat-glands; its centre is in the medulla; a heat-production or thermogenetic mechanism which consists

[1] Guy's Hospital Reports, vol. xlii. p. 49.

[2] Lancet, July, 1885, June, 1889.

[3] Therapeutic Gazette, September 15, 1887; Brain, 1889; Journal of Nervous and Mental Diseases, 1884 and 1887.

[4] Journal of Physiology, vol. xi., No. 1.

[5] Guy's Hospital Reports, vol. lxv. p. 379.

[6] British Medical Journal, 1886, vol. xi. p. 1096.

[7] Clinical Society's Transactions, vol. xix. p. 124.

[8] Practitioner, January, 1886.

[9] The Nature of Fever, 1887.

of (*a*) the muscles in which the greater part of the heat of the body is produced, or (*b*) that part—probably the corpus striatum—of the cerebral nervous system which controls this function of the muscles, and of (*c*) nervous paths connecting these two parts. Lastly, a thermotaxic mechanism, whose office is to adjust the balance between the other two; the seat of this mechanism must be in the nervous system, but its precise position is unknown.

Dr. MacAlister, toward the end of his lectures, observed that the thermotaxic mechanism was almost certainly the last of the three to be evolved, therefore it is the most difficult to localize. It is very elementary in children, and hence the frequency with which in infants slight causes produce considerable pyrexia, and it is easily disturbed through a wide range, as we see in hysterical pyrexia. The thermolytic is the first to be developed. It is well organized, and definitely localized in the vasomotor, respiratory, and sudorific centres; even cold-blooded animals have a thermolytic mechanism. The thermogenetic mechanism is developed after the thermolytic; it is fairly definitely localized, and is first met with well developed in warm-blooded animals. The nervous heat-mechanism, therefore, follows the law of evolution, consisting, as it does, of the passage from the most to the least organized—that is to say, from the lowest well-organized centres up to the highest least-organized centres. The order of organization is like that of evolution—thermolytic, thermogenetic, thermotaxic. Fever, MacAlister looks upon as a dissolution—first, of the thermotaxic, then of the thermogenetic, and lastly, of the thermolytic mechanisms; and he considers that during recovery, first the thermotaxic, then the thermogenetic, and finally the thermolytic recovers.

The above abstract, I think, fairly represents our certain knowledge, and also the modern theory of pyrexia. I propose now to indicate some facts which support this theory, and to examine those that have been urged against it.

The above theory of the evolution of the heat-mechanism supposes the thermolytic is much earlier evolved in the animal scale than the thermogenetic mechanism, and this is supported by the fact that cold-blooded animals are much lower in the animal scale than warm-blooded; for, as warm-blooded animals have to maintain a fairly constant temperature however cold their surrounding medium, we should expect that they would have a much more potent heat-producing mechanism than animals whose temperature fluctuates with that of their environment. It struck me that if the corpus striatum presides over heat-production it ought to be much larger in warm-blooded animals than in cold. I referred to the text-books on comparative anatomy, and although the information is scanty, it appears that this body is small in fishes and amphibians, is larger in reptiles, and becomes much bigger in birds.

We thus see that, roughly speaking, the corpus striatum is smallest in cold-blooded animals and largest in warm-blooded. Further observations on the subject are required—perhaps it will be found that it is largest in just those reptiles, such as the Python bivittatus, which are warm-blooded. In birds it is especially large, and this is interesting when we bear in mind the high temperature they often maintain.

Again, if this evolutionary view be correct the thermotaxic mechanism should be better developed in man than in lower mammals. I made a series of observations upon the rectal temperature of twenty-seven rabbits, and found that quite commonly the temperature varied between 101° and 103° F., and in some few animals a little beyond these limits, so that we may fairly say that the range of normal rectal temperature in this animal is three degrees, a much greater range than in man. It seems rational to attribute this difference to the fact that probably in the rabbit the thermotaxic mechanism is not so well developed as in man.

Also, this evolutionary view appears to derive support from the action of drugs. The materia medica books all state that those drugs which increase the perspiration and dilate the cutaneous vessels, reduce the temperature. Such are alcohol, nitrous ether, and antimony; but every clinical physician knows that these drugs are most uncertain in their antipyretic action, and as a rule have very little effect. Drugs, however, such as quinine, antipyrine, etc., which certainly do not act through the thermolytic mechanism, and, therefore, must act upon one of the other two mechanisms, are powerful agents in reducing pyrexia.

Sawadowski states that antipyrine most certainly acts upon the corpora striata, for after the removal of these bodies in dogs its antipyretic effect could not be observed. If these experiments are confirmed, as, judging from other experimental work, they probably will be, we may conclude that antipyrine acts by diminishing thermogenesis. We, therefore, see that it is difficult to influence by drugs the earliest developed, the thermolytic mechanism, but it is comparatively easy to act upon those—the thermogenetic and thermotaxic—which are later developed. This, however, is nearly always the case with drugs. For example, the recently developed mental faculties are much more easily acted upon by alcohol than are the earlier developed functions, such as motion, respiration, etc.

Another fact in favor of this view of the order of evolution of the heat-mechanism is the circumstance that young children quickly become cold if artificial warmth be withheld. The difficulty of keeping infants born prematurely properly warm is well known, and it is not improbable that the *fœtus in utero* is, until quite the late months of pregnancy, a cold-blooded animal depending for its warmth on the surrounding warmth; and this points to the order of evolution already mentioned.

Against the view that because the chief centres for the vessels of the

skin, for the sweat-glands, and for the respiratory movements, are in the medulla oblongata, and that therefore this part of the central nervous system presides over the thermolytic mechanism, it has been urged that some of the variations of temperature which are produced by cerebral lesions higher up may be due to altered thermolysis, because parts of the higher central nervous system have been thought to have some vasomotor influence, and because sometimes there is a unilateral altered secretion of sweat in ordinary hemiplegia. But it is to be remembered that the vasomotor effects of hemiplegic lesions are insignificant compared with the severe vasomotor disturbance which follows upon lesions of the medulla oblongata, or of the cord, or of the nerves below it; also, it must be borne in mind that alterations in the amount of sweat secreted, and in the degree of vascularity on the side of the body opposite the lesion in hemiplegia, are very rare, and when they take place they are usually slight. Then, also, if we imagine that the rise of temperature following lesions in the cerebrum is due to altered thermolysis, it is very difficult to explain the fact that a lesion of the cerebrum will in a rabbit sometimes produce a rise of several degrees in the rectal temperature within an hour of the experiment, and after a few hours it may sink equally rapidly, for in animals thickly coated with fur alterations in the internal temperature of the body due to variations in thermolysis can only take place slowly. It is also possible that the rare vasomotor and sudorific effects of lesions above the medulla are not due to the direct influence of the higher nervous mechanism, but to a reflex affection of the vasomotor and sudorific centres of the medulla. We probably see instances of a reflex affection of these centres proceeding from the higher parts of the brain in the blushing from emotion and the sweating from fear that are so common. Lastly, we must bear in mind that there are several instances in which, although a certain part of the central nervous system has for its chief office the presiding over a certain function, yet it has some slight influence over functions which are chiefly supervised by some other part of the central nervous system. For example, the area of the cerebral cortex either side of the fissure of Rolando for the most part presides over the motion of the opposite side of the body, yet if it be damaged, there is some weakness on the same side of the body, and also some impairment of the sensation on the opposite side; these, and similar facts, seem to show that when we speak of having localized a function to a certain part of the brain, all we mean is that it is the part whose chief office is to preside over the same function. Looking at the question in this way it would harmonize with well-known facts to suppose that the cortex has some slight vasomotor and sudorific influence. We thus see that at least two other interpretations are possible of those facts which seem to show that the alteration in temperature which follows some lesions above the medulla may occur because the chief centre

for thermolysis is above the medulla; and we also see that on the whole the evidence is greatly in favor of the medulla being the part of the central nervous system which presides over the loss of heat. Probably former writers did not pay sufficient attention to the frequency of respiration as a means of regulating the loss of heat, for many recent experimenters have shown that an increased warmth of blood leads by its stimulation of the medulla to an increased frequency of respiration, and a consequent increased loss of heat, and that this is one of the thermolytic mechanisms by which the temperature is maintained constant. The medulla has consequently been said to have a thermopolypnœic centre.

We now pass to the thermogenetic mechanism. Most observers who investigated the subject before 1886 came to the conclusion that in fever the heat-production was increased, but it must always be remembered that a patient's temperature is the balance between his heat-loss and heat-production, and therefore it does not by any means follow that when the temperature is raised the heat-production is increased. Since then this supposition has been confirmed, not only by calorimetrical observations upon the limbs, such as those of Rosenthal upon the arm, but also by calorimetrical experiments upon man. Ott put a man suffering from ague into a calorimeter, and showed that with the onset of pyrexia the production of heat was enormously increased, and Langlois has made over one hundred calorimetrical observations upon children suffering from broncho-pneumonia and from varicella, and he also found the heat-production to be increased.

It is worthy of note that in just those two fevers in which high temperature persists longest—viz., typhoid and tuberculosis—the patients waste most, and this in spite of the fact that they are fed abundantly. I have often wondered whether this wasting of the muscles was the result of the very active thermogenesis that takes place in them. Sometimes the association between the wasting and the temperature is so intimate that it is very tempting to assume a close connection between them. To give an example: I saw a patient who had a high temperature as the result of an empyema. He wasted rapidly; the pus was let out, the temperature fell, and he put on flesh at once. After some days the pus re-collected, the temperature rose again, and he began to waste visibly from day to day. The pus was let out for the second time; again the temperature fell, and he put on flesh as quickly as he had lost it. Facts like these are very suggestive, and it is quite possible that some day they may be looked upon as a proof that the muscles are the chief thermogenetic tissues. It may, of course, be asked whether we ought not to get a subnormal temperature in diseases such as pseudo-hypertrophic paralysis, progressive muscular atrophy, and primary muscular atrophy, in which there is great muscular wasting; but it must be remembered that we have very few records of the tempera-

ture of these diseases, that a diminished production may be compensated for by a diminished loss of heat, and also that it is well known in pathology that slow destruction does not abolish function to anything like the extent that a rapid destruction does. We do not know what chemical changes in muscle lead to the production of heat; perhaps the increased excretion of urea in fever has some bearing in this relationship. One cannot help noticing that in hydrophobia and tetanus, both of them diseases in which the motor function of the muscles is profoundly disorganized, the temperature of the body is also raised, occasionally in tetanus to a great degree. But it must not be supposed that this is an argument for supposing that the motor and thermogenic functions of muscle are the same. On the contrary, these diseases show that the opposite is the case, for they are both examples of disorders in which a considerable post-mortem rise of temperature may take place after all movements of the muscles have ceased. It is hardly possible that this could occur unless the production of heat continued after death; therefore in these maladies we have an instance of the continuance of one function of a muscle after the cessation of the other.

I have already alluded to the many clinical facts and to the experiments, several of which have been calorimetrical, that have accumulated during the last few years, and which show that damage to the corpus striatum or to the optic thalamus increases the production of heat. Against this view it has been urged that it is extremely unlikely that two bodies, developmentally so different, should have a similar function; but probably this similarity is more apparent than real, for it is quite possible that a lesion of the optic thalamus may injure the tail of the caudate nucleus, or that part of the lenticular nucleus which lies to the outer and under part of the optic thalamus. The corpus striatum may developmentally be regarded as part of the cortex, and therefore it is reasonable to suppose that it, like some other parts of the cortex, has a localized function. The previous experiments in favor of its thermogenetic function have been confirmed by those of Sawadowski and Ott, both of whom have shown that when putrid blood is injected into the veins it is impossible to induce fever if the corpora striata have been removed.

Whether it restrains or stimulates heat-production in health is at present a doubtful question; but the balance of evidence is that the corpus striatum is not inhibitory, for Messrs. Aronsohn and Sachs[1] found they could, by carefully stimulating it by an electric current, always produce a rise of temperature in the muscles and rectum. In these experiments the damage to the surrounding parts was very slight, and every time the current was passed the temperature rose. These results

[1] Pflüger's Archiv, 1885.

were published in 1885, and were quoted by Dr. MacAlister in 1887. In 1884, in my paper in the *Guy's Hospital Reports*, I argued that the thermogenetic centres were inhibitory in their action, and that when they were damaged the temperature rose because this inhibitory power was paralyzed. Since then a consideration of Messrs. Aronsohn and Sachs's experiments, of some of my own, and of fresh clinical facts, leads me to the conclusion that the hypothesis I put forward in 1884 was probably wrong, and that damage to the corpus striatum causes the animal's temperature to rise because the lesion irritates that organ. In favor of this view is the fact that a very small lesion of the corpus striatum will cause a considerable rise in temperature. I have seen a mere puncture in rabbits and a minute patch of softening of the corpus striatum in a human being cause a great rise of temperature, certainly suggesting that mere irritation will greatly increase the production of heat. On the other hand, both in artificial experiments and in the human subject, sometimes the destruction has been extensive and a high temperature has resulted; but it must not be forgotten that a lesion can hardly, unless it kill the animal or the patient, be sufficiently large to destroy the whole of the corpus striatum, and that if only part is destroyed the lesion will irritate the remainder. It is a remarkable fact, which I have often verified, that if in a rabbit a rise of temperature has been produced by a lesion of one corpus striatum, and after the temperature has fallen to normal the other corpus striatum is damaged, the temperature rises again, but it does not remain raised, but falls in a few days. This fact is strongly in favor of the view that the lesion causes a rise of temperature by its irritative effects. I have recorded the case of a child, in whom the temperature was raised often to a great height at frequent intervals for many weeks. At the autopsy the only lesion discoverable was a minute patch of softening in each corpus striatum, which might very well have been a powerful irritant, but certainly destroyed very little of these bodies.

Whilst there is thus a good deal of sound evidence, both experimental and pathological, of the locality of those parts of the nervous system which preside over thermolysis and thermogenesis, we have no certain knowledge of the position of the thermotaxic part which in health maintains the balance between these two, but no evidence has been brought forward to show that it is improbable that any part of the central nervous system has a thermotaxic function. There is, however, clinical evidence of the existence of this function, for although a few years ago those who talked of hysterical pyrexia were often laughed at, now its existence is allowed, and a description of it has crept into two English text-books—viz., Dr. Payne's *General Pathology* and Dr. F. Taylor's *Practice of Medicine*—and it is probably an instance of a disturbance of the thermotaxic mechanism. The chief reasons for this view

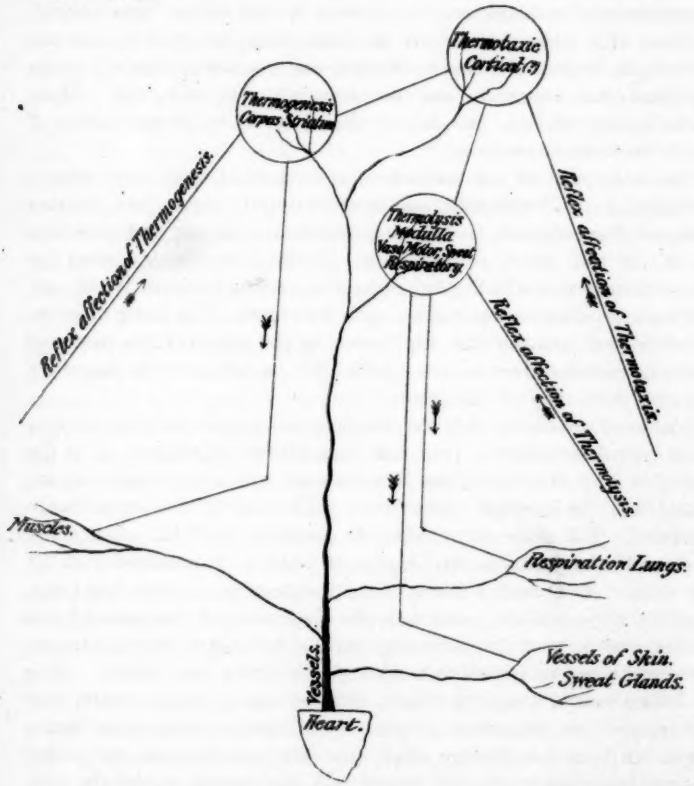
are the extreme and sudden irregularity of the temperature—often it will vary several degrees in an hour; its great height, a height which would probably be fatal if caused solely by an increased production of heat; the fact that it may be very high without the usual accompaniments of a high temperature; and, lastly, the circumstance that the latest evolved mechanisms are on the whole more likely to be upset functionally than are those which are more fixed. It is often the case, that in diseases in which the temperature has ranged high, shortly before death it runs up abnormally high. This is possibly evidence of the existence of a thermotaxic mechanism, for one cannot help suspecting that this mechanism which has been struggling hard to maintain the balance between the heat-production and heat-loss suddenly becomes paralyzed from overstrain, and the temperature at once rises. Rheumatic hyperpyrexia is probably another instance of disorganization of the thermotaxic mechanism.

Our knowledge of the position of this mechanism is very scanty; probably, as it is functionally and developmentally higher than thermolysis and thermogenesis, its seat is anatomically higher, and therefore we should look for it in the cortex. If this is so, it may explain the rise of temperature which many observers, such as Landois, Wood, and Ott, have obtained in experiments upon the cortex. The latter observer is definitely of opinion that the cortex in the region of the fissure of Rolando contains thermotaxic centres, but he also believes that there are some at the base of the brain.

I know of two cases which afford support to the view that the thermotaxic centre is cortical. One[1] has been already published. It is the case of a man who shot himself in the head with a bullet, and was admitted into the hospital unconscious. The bullet was immediately extracted. The temperature after the operation was 99.2°; four hours afterward it had mounted five degrees, to 104.2°. It remained high till the patient died, twelve hours after the operation. It was found that the dura mater was not perforated; the lesser wing of the sphenoid was broken, and parts of the ascending parietal and third frontal convolutions were severely bruised, but otherwise the brain was healthy. Here we have a case in which the thermolytic and thermogenetic centres were not injured, yet there was a rapid rise of temperature—more than a degree an hour—continuing after the bullet was removed, and taking place so immediately after the wound and the operation that the combined shock—which of itself would tend to depress the temperature—of these two could not have passed off. These facts make one strongly suspect that the thermotaxic mechanism was deranged, more especially as other higher centres were disorganized, for the patient was admitted unconscious, and remained so till he died.

[1] Guy's Hospital Reports, 1884, p. 91.

My other clinical case, which appears to localize thermotaxis in the cortex, is that of a man with meningitis, who died within twenty-four hours of the onset of the first symptom, and who had hyperpyrexia, the temperature, which reached 110° F., for two or three hours rising at the rate of two or three degrees an hour, and this, at one part of the rise, in spite of the fact that he was being sponged with ice-cold water. The meninges were acutely inflamed, and it does not seem improbable that the irritation caused by the meninges disorganized the cortical thermotaxic function.



We may, therefore, I think, conclude that the theory of a heat mechanism and its evolution, stated in the first part of this article, has many facts in its support, and there are none which disprove it. Throughout this paper the word centre has been used in its ordinary meaning; although it is a word which should be avoided, it is often difficult to find a substitute. Both the thermogenetic and the thermo-

lytic centres and their efferent nerves are probably both anabolic and katabolic, but for the sake of simplification this subdivision has been omitted.

The accompanying diagram is intended to show that the thermolytic mechanism acts chiefly through the lungs and skin, and the thermogenetic chiefly through the muscles; that the thermotaxic maintains a balance between these two; that either centre can be affected reflexly, and that all parts of the mechanism can be influenced by the quality of the blood circulating through them.

CASE OF AORTIC ANEURISM PRESENTING ONLY INDIRECT SYMPTOMS.

By McCall Anderson, M.D.,
Professor of Clinical Medicine, University of Glasgow.

Reported by William R. Jack, M.B., C.M.,
House Physician.

J. B., aged thirty-six years, by trade a driller, was admitted to Ward 11 of the Western Infirmary on November 16, 1889, complaining of hoarseness of four months', cough of two months', and expectoration of six weeks' duration.

He stated that he caught a chill in the end of June, and two days afterward was attacked with hoarseness. The doctor who examined him could detect nothing in the throat, and he therefore neglected the hoarseness, which remained unchanged. Two months before admission cough began, for which he was "painted" with some external application. This gave no relief, and shortly afterward he had to stop work owing to the severity of the cough, which was frequently so great as to produce vomiting. Expectoration of a clear, thick sputum also began about two weeks afterward. Since the onset of his illness he has been subject to night-sweats, but there has been only slight emaciation. The bowels are moved twice daily. Appetite is good. He has never had any pain in the throat or chest. He suffers from palpitation and shortness of breath—both being worse on exertion and relieved on sitting or lying down.

On examination there are found indications of commencing consolidation at the right apex, and at the left prolongation of expiration, with sibilant râles. The expectoration, which is frothy and muco-purulent, contains no tubercle bacilli. Over the whole left lung, back and front, the respiratory murmur is much weaker than on the right side.

The heart-sounds are normal. The apex-beat is not displaced, nor is the dulness enlarged. Both radial pulses are equal.

The left pupil is dilated and fixed, but the fundus is normal, while the right optic nerve is pale and cupped at its margin.

The voice is replaced entirely by a whisper, and the cough is "incomplete" and laryngeal in character. On examination of the larynx the left vocal cord is found to be paralyzed in the cadaveric position.

All down the right side of the neck there are the scars of old strumous ulceration.

The case was evidently one of intra-thoracic pressure, the cause of pressure being seated at the root of the left lung. The presence of an aneurism springing from the back of the left side of the arch of the aorta was suspected. There was a total absence of physical signs, and as there was evidence of old strumous mischief, I *hoped* that the case might be one of pressure due to enlarged and strumous bronchial glands. The case was, therefore, treated by antistrumous remedies. Under these he gained in weight, but improved in none of his essential symptoms, which remained much as before until the morning of February 4th, when, slightly after midnight, he was wakened by his cough, and sat up in bed. Very soon he spat up a mouthful of blood, and immediately afterward blood gushed in torrents from his mouth, and he was dead within five minutes of his wakening.

On post-mortem examination a small aneurism was found, arising from the back part of the thoracic aorta just beyond the arch. It communicated by an oval aperture with the left bronchus, while just above the aperture there was a point, rather larger than a pin's head, at which the bronchial wall was much thinned. The aneurism pressed upon the trachea and left bronchus, and stretched the left recurrent laryngeal nerve.

In some cases of aneurism, depending to a considerable extent upon the part of the arch from which it springs, the direct symptoms—physical signs—constitute the most prominent features; in others the indirect—or pressure—symptoms. But it is not so widely known as it ought to be, that the indirect or pressure symptoms often exist with very little trace of physical signs, especially when the aneurism springs from the back of the deepest part of the arch. I have myself met with a number of such cases. One of these is reported in the *Edinburgh Medical Journal* (July, 1881). In it there was a total absence of physical signs, the indirect symptoms consisting of bilateral paralysis of the vocal cords, dislocation of the heart, and pressure upon the left bronchus and left innominate vein, with feeble left pulse. In another case, which I saw in consultation with Dr. Samuel Sloan, and which he reported in the *Glasgow Medical Journal*, (February, 1882), there were no physical signs, with the exception of a systolic murmur at the base of the heart, the parts pressed upon being the heart, the left bronchus, and the nerves. In a third case, which I reported in the *Lancet* (November 10, 1883), the only physical sign was a basic diastolic murmur, the indirect symptoms consisting of pain in the chest and at the root of the neck posteriorly, with symptoms of pressure upon the trachea and recurrent laryngeal nerve. In all the cases the diagnosis was verified by post-mortem examination. The importance, therefore, of an accurate knowledge and appreciation of the pressure symptoms of intra-thoracic aneurism is at once apparent.

SOME FURTHER REMARKS UPON THE INFLUENCE OF LEUKÆMIA UPON PREGNANCY AND LABOR.[1]

By J. Chalmers Cameron, MD.,
Professor of Obstetrics, M'Gill University, Montreal, Canada.

At the Washington Congress, three years ago, I read a paper before the Obstetrical Section upon the influence of leukæmia upon pregnancy and labor,[2] and gave a series of observations upon a patient who, while undoubtedly leukæmic, had passed safely through two pregnancies, borne two living children, and was, at the time, again well advanced in pregnancy. Cases had been observed where leukæmia seemed to begin during, or as the result of, pregnancy; but up to that time none had been recorded where a woman already leukæmic had become pregnant and borne a living child. By this case it seemed to be clearly proven that a *leukæmic mother* may bear a *non-leukæmic child*, and that consequently the fœtal and maternal circulations are separate and distinct, and the placental barricade impervious to leucocytes. It seemed also proven that leukæmic symptoms are aggravated during the course of pregnancy but subside rapidly after its conclusion, and that leukæmia does not necessarily prevent conception or even limit the frequency of its occurrence. A number of other interesting questions were incidentally suggested, especially touching the etiology and prognosis of the disease.

Since the Washington Congress several new cases have been reported which throw fresh light upon the subject.

Dr. Greene, of Morgantown, Indiana, reported two cases[3] which, though defective, are nevertheless of considerable value. The first was one of acute leukæmia in a primipara, proving fatal in six months. The second is doubtful, and cannot be admitted without further evidence. Dr. Greene reports to Prof. Jaggard[4] that his second patient has since been pregnant, and again developed leukæmic symptoms which disappeared after the induction of abortion.

Dr. Saenger, of Leipzig,[5] reported the case of a leukæmic mother who bore a healthy child, and another of a healthy mother who bore a leukæmic child. His article is by far the most complete which has yet been published, and is well worthy careful study.

Professor Jaggard, of Chicago,[6] has just reported another case where

[1] Read before the International Medical Congress, at Berlin, 1890.
[2] American Journal of the Medical Sciences, January, 1888.
[3] New York Medical Journal, February 11, 1888, p. 144.
[4] Medical News, July 19, 1890, p. 53.
[5] Archiv für Gyn., Bd. xxxiii. Hft. 2.
[6] Medical News, July 19, 1890, p. 49.

leukæmia developed a few weeks after confinement and terminated life within a year. His patient, æt. thirty-four, VI-para, with a good family history, had borne five healthy children, had no history herself of malaria, syphilis, alcoholism, or traumatism. Three weeks before her sixth labor she was in robust health and weighed one hundred and fifty-eight pounds. The puerperium was normal except for the failure of lactation, and she was up and at work on the tenth day. She then noticed stinging paroxysmal pains in the left hypochondrium but no tumor was perceptible. Menstruation appeared six weeks after labor and once again a little more than five months afterwards. Eight weeks after labor a splenic tumor was first noticed; thenceforth its growth was rapid, splenic pain, emaciation, and malaise increased, and she died eleven months and nineteen days after confinement. The disease was acute and progressive. Blood: red corpuscles per c.mm. 3,255,000. White corpuscles per c.mm. 1,178,000. W : R = 1 : 2.7.

Prof. Jaggard remarks: "The history of the case seems to point to some necessary relation between pregnancy or between prolonged lactation during pregnancy, or both these factors, and the leukæmia. The evidence, indeed, is only probable, but it is sufficient to create a presumption."

Dr. W. O. Stillman, of Albany, sends me the notes of a case where leukæmia developed in the course of pregnancy and proved fatal one month after confinement. Mrs. T., æt. thirty-four, IV-para, first seen in October, 1887, was then suffering from general œdema, extreme pallor, dyspnœa, epistaxis, and general lymphatic enlargement. Blood: red corpuscles per c.mm. 800,000. W : R = 1 : 3. The child was healthy, and at last accounts was thriving well. The patient gave an account of similar symptoms in a minor degree during her second pregnancy; but she quite recovered after confinement.

Since my former article was written my patient has been safely delivered twice, and an opportunity has been afforded to make some further observations.

Mrs. S., æt. thirty-seven, VIII-para, ceased to menstruate May 5, 1887; morning sickness soon began and blood was vomited from time to time. The spleen and liver enlarged and became tender as in previous pregnancies.

July 22. Oblique line of splenic dulness 20.5 cm. (8 inches), and edge of spleen within 9 cm. (3½ inches) of the umbilicus. Downward in the axillary line the dulness extends 20 cm. (8 inches), reaching the crest of the ilium. No increase in hepatic dulness. Blood: red corpuscles per c.mm. 1,406,000. W : R = 1 : 20.

August 18. Looks more pale and puffy; splenic dulness about the same. Blood: red corpuscles per c.mm. 1,373,000. W : R = 1 : 3.

Since the last count the red cells have not diminished very much, but the white cells have enormously increased.

January 13, 1888. Since last examination has been in fairly good health, doing her household work and driving twice a week to market, but during the past fortnight the legs and feet have begun to swell, attacks of epistaxis have been more severe, and dyspnœa more troublesome. Blood: red corpuscles per c.mm. 2,330,000. White corpuscles per c.mm. 56,000. W : R = 1 : 42 nearly.

February 14. Since last examination her condition has grown rapidly worse; the œdema becoming more marked, the dyspnœa, cough and palpitation very distressing, and the attacks of epistaxis more frequent and severe. She was confined at her own home of a living child two hundred and eighty-four days from the cessation of the menses. Labor was rapid, very little blood was lost, the dyspnœa and palpitation were distressing, but were greatly relieved after the termination of labor. The next day the following counts were made (average of four counts): *Mother*, red corpuscles per c.mm. 2,100,000. White corpuscles per c.mm. 54,000. W : R = 1 : 39 nearly. *Child*, red corpuscles per c.mm. 6,600,000. White corpuscles per c.mm. 20,000. W : R = 1 : 330. *Umbilical artery*, red corpuscles per c.mm. 6,340,000. W : R = 1 : 350. *Umbilical vein*, red corpuscles per c.mm. 5,150,000. W : R = 1 : 300.

19*th*. Five days post-partem. Lochia scant, slimy, and offensive. Blood: *Mother*, red corpuscles per c.mm. 1,970,000. White corpuscles per c.mm. 65,000. W : R = 1 : 30. *Child*, red corpuscles per c.mm. 6,520,000. White corpuscles per c. mm. 20,000. W : R = 1 : 326.

Throughout the puerperium the temperature and pulse curves were normal. The breasts filled with thin watery milk, and, contrary to advice, she kept the child to the breast for three or four days. The child, though plump and healthy-looking at birth, never throve, but seemed to fail daily. After the first week nursing was entirely stopped and the child fed artificially. It took food eagerly but did not assimilate it. Diarrhœa and vomiting finally set in and the child died at the beginning of the fifth month. No autopsy was held. The mother did not convalesce as rapidly or satisfactorily as after her previous confinement, and it was fully nine months before she regained her usual degree of health. The menses reappeared in June, painful, profuse, lasting six or seven days, and confining her to bed. Menstruation continued regular throughout the winter and spring, but ceased once more on May 5, 1889. Nausea and vomiting and hæmatemesis began as before. The attacks of epistaxis began earlier, were more frequent and severe. Every three or four weeks a quantity of blood came away per rectum. Dizziness and vertigo became so distressing that she could not walk alone; she had to be led or supported when moving from place to place. Hot flashes, cold sweats, palpitation, cough, and dyspnœa added to her discomfort.

September 19, 1889. She entered the Montreal General Hospital and remained till October 5th under the care of Professor R. L. Macdonnell, to whom I am indebted for the notes of her case while there.

Liver dulness in mammary line extends from sixth rib to two inches below the costal margin, 14.7 c.m. (5¾ inches).

Splenic dulness in mid-axillary line extends downward and somewhat forward for 22–23 cm. (8½–9 inches) in an oblique direction, 19 cm. (7½ inches) transversely, reaches within one inch of the crest of the ilium, and within two inches of the umbilicus. A blowing murmur is

heard over the mitral area, transmitted sightly to the left, and heard also at the base. No hypertrophy of the heart. Urine: sp. gr. 1025, heavy deposit of urates, no albumin, no sugar. Had several attacks of epistaxis while in hospital. Blood (Sept. 29th) : Red corpuscles per c.mm. 2,300,000. W : R = 1 : 28.

November 30. Patient entered the Montreal Maternity almost in collapse. She fainted while being carried to her room. The breathing was rapid and labored, the heart's action embarrassed, the slightest attempt to rise from the recumbent position was followed by fainting. Nausea and vomiting were persistent, cough troublesome, temperature normal, pulse 120–160, and very feeble; she was sleepless and delirious, muttering and picking at the bed-clothes. Fœtal heart sounds could not be heard, neither could fœtal movements be felt. Hypodermic injections of ether were given till she rallied, and then enemata of brandy and beef-tea were administered every four hours. By the next day she was somewhat stronger, but a severe epistaxis brought her again to death's door. It was decided to empty the uterus as soon as she could bear manipulation. On December 3d, at 7 P. M., a bougie was passed into the uterine cavity. Slight pains began during the night. The following morning the os was found to be fully dilated and the head presenting. The membranes were ruptured at 11.30 A. M., and a dead child delivered in seventy minutes. Scarcely a trace of blood was to be seen when the placenta was pressed off fifteen minutes afterward. As the child was passing the vulva the patient fainted, the pulse flickered out, and for a few moments the heart's action seemed to have ceased, but repeated hypodermics of ether roused it to action. The lochia were slimy and offensive. Throughout the puerperium the temperature was normal or subnormal, but the pulse was rapid and variable. Persistent cough prevented sound sleep; a large quantity of frothy mucus was expectorated during the first six or seven days. There was more or less delirium for a week. No milk appeared in the breasts. Epistaxis occurred occasionally, and convalescence was slow. She left the Maternity on December 22, 1889. Even at the present time she remembers very little of what transpired during her stay in the Maternity, and nothing at all about her confinement. The child, born 213 days from the cessation of the menses, was small and poorly nourished, and had been dead for some days. Unfortunately the blood-counts made at the time of this confinement are unreliable and cannot be included with the others. Menstruation was reëstablished in March, and has continued regular, but profuse. She now attends to her ordinary duties, but feels much feebler than formerly. She still has occasional attacks of epistaxis, œdema of the lower extremities, and dyspnœa and vertigo when she goes up stairs. The hepatic enlargement remains about the same as before; the spleen has grown a little larger, extending now below the iliac crest and dipping into the false pelvis.

July 15, 1890. Blood: microscopically, nothing unusual. Red corpuscles, per c.mm. 4,000,000. W : R = 1 : 200. Hæmoglobin index, 75. Retina normal.

The children have been carefully examined, with the following results:

Walter, æt. eighteen, is sallow, delicate, tires easily on exertion, and is subject to epistaxis. Had articular rheumatism in 1880 and 1883,

and again in April, 1890, in the Montreal General Hospital. During this last attack in hospital hepatic dulness was found to begin at the fifth rib and extend downward in the mammary line 11.5 cm. (4½ inches) to the costal border. Splenic dulness began at the seventh rib in the post-axillary line and extended downward 11.5 cm. (4½ inches), and transversely 10 cm. (4 inches). There was general glandular enlargement, the glands all over the body being distinctly felt, and not painful on pressure. At the present time the glands of the neck, groin, and axilla are enlarged. The following blood-counts have been made since last report:

February 19, 1888. Red corpuscles, per c.mm. 4,620,000. W : R = 1 : 230.

April 6, 1890. Red corpuscles, per c.mm. 2,500,000. W : R = 1 : 155.

July 15, 1890. Red corpuscles, per c.mm. 3,480,000. W : R = 1 : 117. Microscopically corpuscles show moderate poikilocytosis, blood-plates abundant, a few microcytes. Hæmoglobin index, 78.

Arthur, æt. seventeen, subject to epistaxis, otherwise in good health; spleen normal, no glandular enlargement.

Lydia, æt. fourteen. July 16, 1890, red corpuscles 5,240,000 per c.mm. W : R = 1 : 300. Hæmoglobin index, 85. Microscopically normal.

Louisa, æt. eleven. Resembles her mother very much in general appearance. Has had undoubted leukæmia once, and is generally ailing. Spleen and cervical glands enlarged. Blood (July 15, 1890): red corpuscles, per c.mm. 3,930,000. W : R = 1 : 150. Hæmoglobin index, 80. Blood is watery, normal microscopically.

Charles, æt. nine. Spleen enlarged, also glands of neck, groin, and axilla. Enjoys fairly good health. Blood (July 16, 1890): red corpuscles, per c.mm. 5,050,000. W : R = 1 : 250. Hæmoglobin index, 100. Normal microscopically.

Freddy, died aged six months. *Vide* former report. Had leukæmia in the Montreal General Hospital.

For the numerous blood-counts and careful microscopic examinations of the blood in this case I am indebted to Dr. Wyatt Johnson, demonstrator of pathology at McGill University, and for the ophthalmological report to Dr. John J. Gardner, assistant oculist to the Montreal General Hospital.

Conclusions.—From the observations now on record the following conclusions seem to be justified:

1. A leukæmic mother may go to full term and bear a healthy child.

2. Leukæmia tends to bring on labor prematurely or reduce the patient to such a critical state that the premature induction of labor becomes advisable.

3. Leukæmia in pregnant women tends to run a rapidly fatal course; yet occasionally its progress may be slow, though progressive.

4. During the first three or four months of gestation, a leukæmic patient may not suffer much inconvenience; but as intra-abdominal tension increases, her distress becomes greater, graver symptoms rapidly

develop, and the patient is quickly reduced to a pitiable and dangerous condition.

5. Leukæmia does not prevent the occurrence of pregnancy, nor does it seem to limit its frequency.

6. As regards the relative characters of blood in the maternal, fœtal, and placental circulation, later observations confirm those made on a previous occasion.

7. While epistaxis, hæmatemesis, and melæna may occur frequently during the progress of gestation, there may be no uterine hæmorrhage at the time of labor or during the puerperium.

8. Menstruation may be affected. In the case of Mrs. S. menstruation was scanty and painless before the appearance of leukæmia; since, it has been profuse and painful.

9. Leukæmia seems sometimes to have an injurious effect upon lactation. In Mrs. S., who had always been a good nurse, the function was either suppressed or the milk so altered in quality as to become unwholesome and injurious.

10. The question of hereditary influence or predisposition is unsettled, but the case of Mrs. S. is very suggestive. The grandmother, mother, and brother suffered from symptoms pointing to leukæmia; two of her own children have had undoubted leukæmia, all have had jaundice, most are subject to epistaxis, all have glandular enlargement and more or less anæmia. It is more than probable that some of these children will sooner or later develop leukæmia. One child at least (Louisa), born before her mother showed signs of leukæmia, suffered from well-marked leukæmia lienalis. Although a mother does not transmit leukæmia directly to her child, is it not very probable that she may transmit a tendency or predisposition thereto?

TABLE I.—(MRS. S.) BLOOD-COUNT; AVERAGE OF THREE COUNTS.

Date.	Red cells.	W. : R.	Remarks.
1885. Sept. 17 . . .	2,400,000	1 : 40	In the Montreal General Hospital three months after confinement.
" Sept. 25 . . .	2,900,000	1 : 17	Left Montreal General Hospital Nov. 2d.
" Oct. 31 . . .	2,480,000	1 : 12½	
1886. April 28 . . .	3,400,000	1 : 50	One month pregnant.
" May 3 . . .	2,900,000	1 : 45	
" Oct. 8 . . .	1,070,000	1 : 10	
" Oct. 29 . . .	990,000	1 : 4	Two hours after delivery.
" Nov. 1 . . .	1,100,000	1 : 20	
" Nov. 9 . . .	1,900,000	1 : 35	Discharged from the Montreal Maternity.
1887. July 22 . . .	1,406,000	1 : 20	Between two and three months pregnant.
" Aug. 18 . . .	1,373,000	1 : 3	Between three and four months pregnant.
1888. Jan. 13 . . .	2,330,000	1 : 42	
" Feb. 15 . . .	2,100,000	1 : 39	The morning after delivery.
" Feb. 19 . . .	1,970,000	1 : 30	Five days post partum.
1889. Sept 29 . . .	2,300,000	1 : 28	
1890. July 15 . . .	4,000,000	1 : 200	

TABLE II.—COMPARISON OF BLOOD-COUNTS OF MOTHER, CHILD, AND PLACENTA; AVERAGE OF THREE COUNTS.

Date.	Subject.	Red cells.	W. : R	Remarks.
1886. Oct. 29	Mother . . .	990,000	1 : 4	Two hours after delivery.
" Oct 29	Child . . .	5,210,000	1 : 175	Two hours after birth.
" Oct. 29	Umb. vein (trunk)	4,610,000	1 : 173	Eighteen hours after expulsion of the placenta.
" Oct. 29	" " (branch)	4,600,000	1 : 128	
" Oct. 29	Umbilical artery .	5,410,000	1 : 270	
" Oct. 29	Placental sinuses .	950,000	1 : 3.6	
1886. Nov. 1	Mother . . .	1,100,000	1 : 20	
" Nov. 1	Child . . .	5,000,000	1 : 150	
1888. Feb. 15	Mother . . .	2,100,000	1 : 39	The morning after delivery.
" Feb. 15	Child . . .	6,600,000	1 : 330	The morning after birth.
" Feb. 15	Umbilical vein .	5,150,000	1 : 300	Twelve hours after expulsion of placenta.
" Feb. 15	" artery .	6,340,000	1 : 350	
" Feb. 19	Mother . . .	1,970,000	1 : 30	Five days post partum.
" Feb. 19	Child . . .	6,520,000	1 : 325	

TABLE III.—BLOOD-COUNTS OF CHILDREN; AVERAGE OF THREE COUNTS.

Date.	Name.	Red cells.	W. : R.	Remarks
1887. July 13	Walter, æt. 15	3,355,000	1 : 200	
" Aug. 18	" æt. 15	3,240,000	1 : 200	
1888. Feb. 19	" æt. 16	4,620,000	1 : 230	
1890. April 6	" æt. 18	2,500,000	1 : 155	In Montreal General Hospital.
" April 6	" æt. 18	3,480,000	1 : 117	
1887. July 13	Arthur, æt. 14	4,725,000	1 : 350	
1887. July 13	Lydia, æt. 11	4,795,000	1 : 350	
1890. July 16	" æt. 14	5,240,000	1 : 300	
1885. Oct. 12	Louisa, æt. 6	1,912,000	1 : 15	Was in Montreal General Hospital, from October 5 to December 12, 1885, with leukæmia; spleen enlarged.
" Dec. 2	" æt. 6	3,576,000	1 : 16	
1887. July 13	" æt. 8	4,220,000	1 : 300	
" Aug. 18	" æt. 8	3,183,000	1 : 240	In failing health.
1890. July 15	" æt. 10	3,930,000	1 : 150	
1887. July 13	Charles, æt. 6	4,525,000	1 : 350	
1890. July 16	" æt. 9	5,050,000	1 : 250	
1885. Sept. 15	Fred., æt. 3 mo.	.....	.....	Spleen enlarged, red corpuscles diminished, white increased; blood-count lost. Died at six months.

AN ANALYSIS OF THE MOTOR SYMPTOMS AND CONDITIONS OF THE OCULAR APPARATUS, AS OBSERVED IN IMBECILITY, EPILEPSY, AND THE SECOND STAGE OF GENERAL PARALYSIS OF THE INSANE.

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The present paper combines a series of observations and conclusions, the result of four years' work in this class of cases at the State Hospital for the Insane at Norristown, Pa. The grouping of the motor innervations and actions as seen in epileptic dementia, as shown in imbecility in the adult male, and as found in the second stage of so-called general paresis, into a separate and distinct analysis from that of the sensory changes of the same apparatus, has served to form a portion of the Tenth Annual Report of the Institution. It is here presented as a series of conditions and actions which are so frequently observed amongst such individuals as seemingly to admit of sufficiently broad generalizations to allow proper, though of course tentative, conclusions.

Certain governing rules in the selection of the cases, which have been established from the first observation, and which are believed to be of sufficient importance to demand recapitulation are here given:[1]

1. A special variety of symptomatic disease was taken in preference to any mental condition, because similar mental states in the many and bizarre forms of nerve lesions, masking and hiding the true significance of the objective symptoms peculiar to any one disease to such an extent as to render differentiation impossible, are very frequent in mental disorders.

2. A definite variety of disease was chosen, so as to avoid obtaining a mere percentage of the ophthalmic signs of the total number of cases occurring in one asylum—an answer which through constant changes in the number of the resident population or temporary peculiarities in the character of mentality, is liable to alter at any time, and thus make such an analysis give results and conclusions which would be totally diverse from those that might be obtained by another observer placed in a different situation.

3. A large percentage of similar cases was taken. This was done so that the different mental states which are seen during a definite situation in the course of any one disease might be united in a theoretical example of the physical and physiological conditions of the disease at that stage.

[1] See Proceedings of the Philadelphia Neurological Society for December 27, 1886, in the Philadelphia Medical Times, February 5, 1887, and elsewhere.

4. Males were used; this is important, for, by the exclusion of the female subject, any errors that might arise from additional ocular changes dependent upon diseases which are peculiar to the sex would thus be avoided.

At first, among the epileptics, no differential diagnoses were attempted as to the causation of the convulsions, this being done so as to embrace the entire grouping of such cases into a common lot of subjects, in order to have the greatest variations of supposable differences present at one and the same time, and thus to give greater latitude to error. Later, however, as the subject became more familiar and finer differentiations became more visible, attempts were made to isolate the cases into specialized groupings. Although most of the peculiarities of the pupil, independent of local adhesions or individual differences in the behavior of the irides which could be accounted for by refractive error, seemed to be in direct correspondence with the local conditions of the optic nerves and retinæ, yet in a few instances there were some very curious errors of extra-ocular and intra-ocular muscle-action, which no doubt were the visible expressions (just as the rest) of some peculiar though definite phases in the natural history of the general disease.

During the examination of the imbeciles the following precautions were observed:[1]

"First. Care was taken to exclude all but the proper class of subjects, no one being admitted who could not be properly designated as one with decided loss of mental power of a minor degree than idiocy, from malformation or disease of the nervous system, either supervening in infancy or occurring before birth. This was done so as to avoid any error that might arise from the presence of ocular symptoms which might be dependent upon other malformation or disease, and to exclude any question as to the use of eyes for prolonged near-work during the early years of life.

"Second. Subjects chosen whose eyes were free from extraneous disease or inflammation. Sore eyes of inflammatory and traumatic types were avoided, so as to obtain as nearly as possible representative peripheral (end) organs of comparatively healthy functional activity.

"Third. Young adults were used. This was done for two reasons: first, to have the eye at its full maturity, and thus not to allow any question of further development to enter into the argument; and second, to have the tissues of the eye at their best before any of the processes of natural decay should have manifestly asserted themselves.

"Fourth. Males have been taken. These were chosen so as to avoid any errors that might arise from additional ocular changes which might be associated with diseases peculiar to the female sex.

[1] See Transactions of the American Ophthalmological Society, 1887.

"Fifth. Every subject was submitted to the same routine examination, thus preventing any seemingly gross changes to appear that might arise from differences in methods of study.

"The reasons for such rules must be obvious, as by their observance all faults in working and want of precision in method are reduced to a minimum, and the conclusions, which are the very import of the work, are thus rendered more valuable and less liable to grave and deceptive error."

In the third series of cases great care was also taken that each subject was seemingly free from any extraneous general disease or local disorder, and that competent and authoritative medical opinion had been given as to the type of the general complaint; besides, the entire study in this direction has been limited to the male sex, so as to escape any conflicting complicating changes that might appear in connection with the many diseases peculiar to the female sex.

Observations: Intra-ocular Muscles.

Epilepsy.

First. Iris muscle innervation in most instances seemingly normal in reference to both the age of the patient and the refractive condition.

Second. Iris muscle action, as a rule, apparently unimpaired both in separated and combined motion.

Third. Ciliary muscle innervation, as a rule, most probably normal.

Fourth. Ciliary muscle action apparently generally unaffected; being in direct proportion to what should be expected for age and refractive change.

Imbecility.

Fifth. Iris muscle innervation generally normal for age and amount and character of error of refraction.

Sixth. Iris muscle action sometimes sluggish to efforts for convergence and accommodation, though rather more prompt to light-stimulus; the degree of these acts being in due proportion to the grade of imbecility.

Seventh. Ciliary muscle innervation apparently normal.

Eighth. Ciliary muscle action impossible to obtain accurately subjectively, though objectively there appeared to be a deficient response in a few cases.

Second Stage of General Paresis.

Ninth. Iris muscle enervation frequent, as shown by more or less irregularities in pupil-form; this being notably seen not only in different subjects, but of frequent occurrence at various times in the same patient.

Tenth. Iris muscle action generally lessened to light-stimulus, frequently unequal to light-stimulus and accommodation, and in several instances very feebly responsive to efforts for accommodation and convergence alone; these changes often manifesting themselves in the two irides of the same subject.

Eleventh. Ciliary muscle innervation lessened, although no reliable subjective and objective method could be used to scientific advantage and accuracy.

Twelfth. Ciliary muscle action probably pathologically decreased independent of senile change and character of error of refraction; this most absolutely certain, and sometimes seemingly rendered apparent by the use of the retinoscope.

Extra-ocular Muscles.

Epilepsy.

Thirteenth. Extra-ocular muscle innervation seemingly proper in the vast majority of cases, a few cases showing some peculiarities in motor station: the quite large number of insufficiencies of the interni that could be properly studied being in every instance associated with an existing compound hypermetropic astigmatism.

Fourteenth. Extra-ocular muscle action apparently intact in all directions, although in the greater number of cases of insufficiency that could be depended upon, there was a preponderant work given to the interni for proper binocular adjustment; this latter condition in every case, however, having both farsightedness and astigmatism associated with it.

Imbecility.

Fifteenth. Extra-ocular muscle innervation, as a rule, apparently normal; fully one-half of the cases examined preserving proper muscle balance.

Sixteenth. Extra-ocular motion intact in all directions; a very slight insufficiency of the internal recti being found in about fifty per cent. of cases.

Second Stage of General Paresis.

Seventeenth. Extra-ocular muscle enervation the rule, as shown by insufficiencies of all the straight muscles, though more particularly when the interni were associated in action with efforts for convergence.

Eighteenth. Extra-ocular muscle action weakened, as seen by peculiar nystagmic motions which are made visible at the moment of the utmost contraction of the experimented muscle, and the preponderance

of insufficiencies of the recti muscles, especially the interni, over their related refractive conditions.

Conclusions.

First. In idiopathic epilepsy of the male adult, even where the stage of dementia has been reached, both the intra-ocular and the extra-ocular motor-groupings seemingly, as a rule, remain unimpaired both as to innervation and to active impulse, although in some instances curious enervations and limitations of action seem to exist.

Second. In the lower grades of imbecility, as seen in the male adult, which have resulted from malformation or disease of a minor degree than that producing so-called idiocy, that have supervened in infancy or occurred before birth, both the intra-ocular and the extra-ocular muscle-groupings, as a rule, remain unaffected both as to innervation and as to proper action; in fact, they seem ordinarily to retain their original condition without any pronounced indications of wear and tear; a condition that most probably evidences very little abuse of a delicately poised muscular apparatus.

Third. In the second stage of paresis, as seen in the male, both the intra-ocular and the extra-ocular motor-groupings are in all instances more or less paretic, as evidenced by inequalities and irregularities of pupillary areas, with peculiarities in iritic movement and loss in ciliary tone and power, as well as by extra-ocular insufficiencies and ataxic nystagmic motions—all indicative of imperfect muscle-innervation and inadequate muscle-action.

REVIEWS.

THE ANATOMY OF THE CENTRAL NERVOUS ORGANS IN HEALTH AND IN DISEASE. By DR. HEINRICH OBERSTEINER, Professor (Ext.) at the University of Vienna. Translated, with Annotations and Additions, by ALEX. HILL, M.A., M.D., M.R.C.S., Master of Downing College, Cambridge; Examiner in Anatomy to the Universities of Cambridge and Glasgow. With 198 Illustrations. Philadelphia: P. Blakiston, Son & Co., 1890.

THE treatise of Obersteiner has been in the original before the profession since 1887, and its merits have been recognized by many neurologists to whom the work and standing of its author are well known; but to the medical student, the general practitioner, and even to some specialists and semi-specialists, this valuable text-book, volume of reference, and laboratory hand-book has not been accessible because of the lack of a good translation. Professor Alexander Hill, of Cambridge, who stands in the front rank of English anatomists, has now supplied this translation to the English-reading profession—an admirable one, not having the clumsiness and want of clearness which often attach to some, even accurate translations of German medical text-books, a fault which has detracted greatly from their value. Professor Hill says that he has always held that to transform a book from one language to another needs the collaboration of members of both nationalities, and he expresses his indebtedness to Fraulein Kloss for having read through all of the German text with him, also acknowledging the direct assistance of Professor Obersteiner in explaining obscure passages. In brackets and foot-notes the translator has made numerous, and in most cases extremely valuable, additions to the original text; he has introduced twenty-two illustrations, and in the index for the terms used in the German edition has given the commoner synonyms and French equivalents. These additions are not, as is sometimes the case with such work, mere trifles, or perhaps even impertinences on the part of the translator. They are particularly rich in suggestions as to the architecture, mechanism, and functions of the nervous system. Occasionally his views differ from those of Obersteiner, but they are presented in such a way as not to conflict or cause confusion in the mind of the student.

The value of the illustrations, 198 in all, is enhanced by the manner in which they are introduced and arranged in order to carry out the process of progressive teaching. The drawings of the microscopical sections, for example, if followed successively through the different stages of the book, will leave the student at last with a good, practical knowledge of the histology and pathology of the nervous system. Obersteiner says truly of models that we do not as yet possess any that are completely satisfactory.

A glance at the method and arrangement of the book may be useful to those desiring to decide as to the purchase of a new neurological work. The first section includes the best methods of studying the nervous system, containing succinct, careful descriptions of such processes as defibreing, hardening, cutting, imbedding, staining, coloring, and impregnating, and giving in connection with the methods the general appearances, and some of the results to be obtained. Morphology is next discussed—the best methods for microscopic work are detailed; the development of the nervous system is presented by the translator; the various divisions of the nervous system are described as to their gross appearances with excellent illustrations of natural size, a diagrammatic and lettered drawing usually accompanying the view. The anatomical details in this portion of the book, while much the same as may be found in many recent works, are presented in an unusually clear and instructive manner, and some unfamiliar details are brought out. A third section contains a description of histological constituents beginning with the fibre and cell and concluding with the vessels and miscellaneous tissue-elements of the nervous system. The minute structure and the topography of the spinal cord; also the topography of the brain, including under this head the oblongata and pons, and basal portions of the brain, are considered. The sixth section treats in an intelligible manner of the course of the fibres connecting the various parts of the nervous system; this description involving by reason of the philosophical plan of the author a discussion of the entire neural tracts from their peripheral to their central end-points, hence including some discussion of the ganglia, cortex, and association-tracts. Finally, the cavities of the central nervous system receive attention.

The book is packed with facts, many ancient and classical, many from various sources of recent date, and many original with the author and translator. To some of the valuable additions and suggestions of the latter we might direct attention. Hill lays stress upon the fact that the brain during its growth exhibits a well-marked tendency to bulge into defined lobes, and concludes from his survey of mammalian brains that these natural lobes have a distinct morphological, and presumably also a distinct physiological significance. In an appendix he summarizes his views on the rotation of the great brain, first published in 1885, in a monograph on *A Plan of the Central Nervous System*. These views are of great importance to an understanding of the form and subdivision of the adult brain. The hypothesis is that the mammalian brain during its growth rotates upon itself, thus producing a loop or kink, giving to the whole brain somewhat of the form of a ram's horn, and bringing the part which was at first in front on to the under side of the back. This view was almost a necessary deduction from the conclusion that the olfactory tract was connected with the front of the thalamus by way of the fimbria, fornix, corpus mammallaria, and bundle of Vicq d'Azyr, the tract ascending from each corpus mammallaria to the thalamus. This conclusion is of course not the only stone upon which the theory is built. Rotation of the great brain, according to Hill, accounts for many other features in the plan of its formation, as, to give but a single example, the appearance of the Sylvian fossa.

Owing to the continued prominence of the subject of cerebral localization, and also to the differences which still exist as to the functions of some of the brain areas, it may be worth while to note the views held

by both the author and translator. In general these views seem to coincide with those held by the English and American physiologists and neurologists. The one portion of this subject still most obscure and most disputed, that of the cortical localization of the cutaneous sensations, is discussed, but not cleared of its mists either by Obersteiner or the translator.

The discussion both by Obersteiner and Hill of the so-called granule cells is sufficiently interesting to warrant particular attention. This quite distinct kind of nerve-cell in the substantia gelatinosa of the spinal horns, the retina, the olfactory bulb, and the nuclear layer of the cerebellum, Obersteiner considers as a peculiar tissue adjunct of the nervous system. Hill's hypothesis, which is novel, is that each granule cell "is a minute fusiform bi-polar cell intercalated in the course of a non-medullated fibre between its epithelial terminus and the plexus, into which it breaks up, from which plexus each large nerve-cell collects the products of many of these minute naked fibres, and associates them in a single medullated nerve for transmission to the central system. In the olfactory bulb, and for some distance along the olfactory tract, are found granules indistinguishable in appearance from those of the retina. Other conditions which obtain in the retina are also found in the olfactory bulb, and there is every reason for regarding the 'granules' of the two organs as similar in function. Although methods of isolation have hitherto failed to show the continuity between the protoplasm surrounding the granule and naked nerve-filaments, it is safe to assume that the granule is the nucleus of a bi-polar cell with non-medullated processes. The granule of the retina is the deposed epithelial cell which establishes a connection between the sensory epithelial cells and the central nervous plexus." He holds, in brief, that the granules in the cortex are fusiform cells attached to the terminal twigs of afferent nerve fibres; that they are sensory cells, in other words.

The four bulgings pointed out by Hill, namely, the frontal, opercular, occipital, and temporal, certainly constitute the best basis for a physiological division of the brain into lobes. He says of the unknown or uncertain region between the Rolandic and occipital lobe that it is difficult to say how it should be allocated. This is the region to which, in connection with the gyrus fornicatus, the reviewer has assigned the centres for common sensation; and arguments by exclusion, such as are afforded by Hill, would favor this location. The reviewer in his monograph on Cerebral Localization has also suggested a division of the brain into lobes, from physiological and clinico-pathological studies, which is confirmed by these embryological studies and suggestions of Hill.

To the spelling of the word "neurogleia," suggested by the translator, it is worth while to call attention, as it is a word of such frequent occurrence in neuro-pathology.

"'Neuroglœa,' says Professor Hill, 'would undoubtedly be more correct, but would affect the pronunciation. In German, the spelling neuroglia is perhaps unexceptionable, but it makes a terrible word in the English fashion. Not only the spelling of the term but also its application is, however, open to discussion. It appears to the translator to be a useful term when applied to the connective tissue of the central nervous system, which differs from other forms of connective tissue in its origin from epiblast; whereas, when restricted to the matrix it gives an undesirable definiteness to what is, after all, a hypothetical substance.'"

Not one of the many books on the anatomy, pathology, physiology, and clinical aspects of the nervous system is just like this treatise. While much of the material has been necessarily received from other minds and hands, its presentation, as the author justly claims, rests throughout upon autoptic observations. When he details the numerous methods of examination, of defibreing, staining, impregnating, etc., his descriptions of processes, and his judgments as to the comparative methods of different procedures show a practical familiarity with every detail of his subject. When he retails old facts as to the morphology of the central nervous system, the topography of brain or spinal cord, or the pathological conditions of vessels and membranes, one feels that a master is dealing with the questions expounded. Original explanations, novel suggestions, and scientific criticisms are made in the most modest manner. Obersteiner is a teacher as well as a scientific worker, and is evidently acquainted with the wants of both the beginner and the advanced student of neuro-pathology. This book should be in the library of every medical man interested in neurology. C. K. M.

THE NATURAL HISTORY AND RELATIONS OF PNEUMONIA: ITS CAUSES, FORMS, AND TREATMENT. A CLINICAL STUDY. By OCTAVIUS STURGES, M.D. Cantab., F.R.C.P., Physician to the Westminster Hospital and the Hospital for Sick Children, Great Ormond Street; and SIDNEY COUPLAND, M.D. Lond., F.R.C.P., Physician to the Middlesex Hospital. Second edition. London: Smith, Elder & Co., 1890.

AN occasional monograph is absolutely necessary to the best progress in any department of knowledge, and especially so if the latter is not included among the exact sciences. By such a work facts apparently contradictory are often reconciled, and threads of discussion unravelled which had seemed to be inextricably entangled. A critic might readily admit this, and yet contend that books of this sort also resemble halts or breathing-spaces, from which a fresh start is taken toward new contradictions and further entanglements. Such pessimism is given the *coup de grâce* by reference to successive monographs upon any subject whatever, or, still better, by comparing the different editions of the same one. In the work before us, for example, a comparison of its two editions shows that material progress has been made toward a thorough knowledge of the subject of which it treats. Since the first edition was published, in 1876, the study of bacteriology has illuminated some of the obscurest questions of pathology, and, in the opinion of many, has added pneumonia to the long list of infectious diseases. A new chapter on pathology was, therefore, a necessity. Another point of great importance is that increase in knowledge does not necessarily imply addition to the common fund, but may quite as truly mean subtraction. In other words, the detection and exposure of the false are next in importance to the recognition and welcome of the true. These different though harmonious functions of the monograph are so well performed by the one under review as to assure its place as a standard, and make the time remote when it will need a complete revision.

One of the first and greatest difficulties connected with the subject of pneumonia is a satisfactory clinical definition of the disease. Not a great while ago it was generally taught that the crepitant râle was pathognomonic of pneumonia, *i. e.*, that it was indicative of this disease and nothing else. Pneumonia might exist without this râle being audible, but when heard it certainly indicated pneumonia. This doctrine is, no doubt, still taught and widely accepted; but its falsity can be exposed by any resident physician of a large hospital who is moderately expert in physical diagnosis, and not afraid to trust the evidence of his senses. We have ourselves frequently heard the râle in patients with no chest disease whatever, at the termination of the first two or three deep inspirations, just after rising from a dorsal decubitus. In such cases the crepitation, which is very faint and evanescent, is indicative of nothing more than hypostatic congestion. We fully agree with Drs. Sturges and Coupland that the "absolute probative value of this sign has, in fact, been much exaggerated." Taken in connection with pyrexia, pain, altered pulse-respiration ratio, and rusty sputa, its significance is manifest; and the same remark is applicable to all the signs and symptoms mentioned, each one of which, taken singly, is comparatively worthless. It is too much the custom to rely for the diagnosis of pneumonia exclusively upon the physical signs, all of which "may be delayed until several days after its initial rigor."

Under the head of lobar pneumonia are doubtless often included cases of lobular or broncho-pneumonia, especially when these occur in the aged, and in infants and young children. This form of pulmonary inflammation often runs a subacute, or even latent course, and has thereby exasperated one author, who evidently confounds it with the true croupous or fibrinous pneumonia to such an extent as to cause him to speak of the latter, when it assumes this shape, as a "low, sneaking inflammation."

Such misconceptions compel the writer on pneumonia to give a clear definition of what he understands by the term, indicating in appropriate sections such deviations from the type as are caused by previous or concomitant illness, intemperance, starvation, mental depression, and the like. These important points are fully appreciated by our authors, who define pneumonia as "that form of lung inflammation which, whether fatal or not, is characterized by sudden onset, well-defined symptoms, distinct anatomical stages, and limited duration."

The associations of pneumonia with various acute and chronic diseases, such as phthisis, rheumatism, pericarditis, endocarditis, nephritis, influenza, etc., are discussed in a concise and interesting manner. Of these associations the last-mentioned is at present the most interesting, but no explanation is attempted of the remarkable predisposition to pneumonia observed in the recent epidemic of influenza. Drs. Sturges and Coupland believe, however, that the "frequency with which lung inflammation follows influenza is too great to be accounted for by predisposition merely, and argues an affinity between the two as yet, in our opinion, unexplained."

The chapter on pathology is, paradoxical as it may seem, the most interesting to the clinician, and the least so to the mere pathologist. This is due to the facts that the book is, as its name implies, a clinical study, and that clinicians, *i. e.*, those whose knowledge of the natural history of

diseases is greatest, are slowest to accept doctrines concerning their nature and mode of transmission.

A review of the evidence, clinical and etiological, that pneumonia is a specific disease, leads to the conclusion that "there is much in its support. But, in face of the fact that more than one kind of organism has been claimed to be causative of the disease, and of the comparatively recent discovery of such pneumonic microbes, we may be pardoned for withholding an unqualified assent to the proposition that pneumonia is a germ disease."

Under the head of etiology several interesting cases bearing upon the vexed question of contagion are reported, and the conclusion reached that "there is less clinical evidence of the occurrence of pneumonia by contagion than there is for its origin from exposure, from sewer-gas, from want of food, even from mental and bodily depression, and, if it be granted that any of these agents may possibly provoke pneumonia, it may be doubted whether it is further necessary, in order to satisfy the facts, to make any large appeal to this origin by contagion."

The subject of treatment is discussed in a philosophical manner, and begins with a history of methods which have at various times been employed, recommended, superseded, and abandoned. There is no specific and no one remedy universally applicable. The alleviation of pain and of cough, and the reduction of excessive pyrexia, are frequently-recurring indications. For the last-mentioned purpose the different antipyretics, such as antipyrin, antifebrin, and other allied drugs, are not recommended, the author's experience with them not having been favorable. Facts are given which tend to prove that the application of ice to the chest not only relieves pain and reduces temperature, but exerts a generally beneficial action upon the course of the disease. The indications for and against the use of digitalis, opium, and bleeding, are clearly and positively stated, and are based solely on personal experience.

Without entering into further details, although there are several to which interesting reference might be made, we will conclude our notice of this excellent monograph with the words with which it also concludes: "We are content with the adoption of means which have the advantage of obvious reasonableness, resting not on the shifting sand of to-day's therapeutics, but on broad principles of conduct universally recognized and understood." F. P. H.

THE SHADOW-TEST IN THE DIAGNOSIS AND ESTIMATION OF AMETROPIA. By W. M. BEAUMONT, Surgeon to the Bath Eye Infirmary. Pp. 40. London: H. K. Lewis, 1890.

THIS monograph presupposes "a general knowledge of the use of the ophthalmoscope;" and "to make the book as practical as possible" the optical explanation of the shadow-test is omitted. As to the test, therefore, little remains to be said except bald description, and rule-of-thumb directions as to how to apply it. The omission of any optical explanation is the more unfortunate because the study of the subject on the part

of the author, that its introduction would have entailed, might have saved him from such meaningless statements or errors as the following: "According to the position of the image, whether in front of or behind the nodal point of the eye under observation, will the shadow move when the mirror is rotated." Or "The shadow produced by the plane mirror will be found to move in exactly the opposite direction to that produced by the concave mirror, excepting only in very low degrees of myopia."

Again, we find it here repeated: "The surgeon should be aware of any ametropia that may exist in his own eyes before practising the shadow-test." Now, there can be nothing said against the surgeon knowing his own ametropia before he does this or anything else. But the obvious implication, which alone makes the sentence relevant, is that there is some especial reason for such knowledge in the case of the shadow-test, which is exactly the opposite of the fact. Then, too, the other venerable error that to use the plane mirror "the observer should be seated more than four metres from the patient," gets duly or unduly reiterated.

These latter errors were pointed out in this journal more than five years ago. Yet one or the other of them reappears in half the articles upon the subject that have been published since, showing conclusively a very imperfect practical acquaintance of their authors with the subject. Such a state of affairs is not peculiar to the literature of the shadow-test, though here well illustrated. E. J.

THE THROAT AND NOSE, AND THEIR DISEASES. By LENNOX BROWNE, F.R.C.S.E., Senior Surgeon to the Central Throat and Ear Hospital, Surgeon and Aural Surgeon to the Royal Society of Musicians, Consulting Surgeon to the Newcastle Throat and Ear Hospital, etc. With one hundred and twenty illustrations in color and two hundred and thirty-five engravings designed and executed by the Author. Third edition, revised and enlarged. 8vo., pp. 716. London and Philadelphia: Lea Brothers & Co., 1890.

THIS new edition of Lennox Browne's well-known and admirably devised work on the throat now includes in text as in title the subject of the nose as one of its principal subjects instead of an accessory one merely as in the previous editions. Our review of the second edition having appeared so recently, and there being nothing to modify the good opinions then expressed, our present notice will be confined to the chapters on the Diseases of the Nose. They begin with the general pathology of nasal and naso-pharyngeal diseases, discussing the anatomy of the tract and its accessory cavities, and of the olfactory and respiratory regions of the nose, with physiological considerations as to their importance in breathing, in speaking, and in exciting reflex phenomena adjacent and at a distance. A special classification of the diseases of these structures is presented, based respectively, as to the intra-nasal tract, on the morbid condition of the mucous membrane, and of the osteo-cartilaginous framework and the septum, and on new-growths, whatever their points of origin; which are subdivided and resubdivided so as to include the many varieties of morbid conditions met with. While it may not suit every systematic writer, this classification is excellent in

its way, and not too diffuse. Thus, acute rhinitis may be simple or non-specific; specific from syphilis, diphtheria, gonorrhœa, glanders, etc.; and neurotic rhinitis as in hay-fever, which, with Sajous, he prefers to term periodic hyperæsthetic rhinitis, and in pseudo hay-fever, that variety due to exciting agents other than pollen. In the treatment of acute rhinitis the author has for some time used nothing but menthol inhaled into the nose or applied by spray, brush, or inhaler, or by light tampons of menthol wool. Camphor similarly used has been in commendation for more than a generation. In this connection an extensive note is appended describing the characteristic properties of menthol, which is strongly recommended in several other connections. Atrophic rhinitis is believed to be often a primary affection as far as regards any pathological process in the nose, although the pathological change may be really due to a morbid diathetic state of the system. Two other factors are regarded as excitants: abnormal patency of the anterior nares with an upturned condition of the nose, and the pretty constant inhalation of an insanitary atmosphere. In treatment, great success is claimed from occasional light searings of the atrophied tissues with the electric cautery so as to set up active granulation, and the topical use of stimulating inunctions, as of iodoform, iodol, or menthol.

The subject of deviations and deformities of the septum narium has been much amplified; the author concurring with the views of those writers who believe that traumatism is the most important factor in the production of septal deviations, and with those of Dr. Holbrook Curtis, of New York, as to a causal relationship between anæmia and nasal stenosis.

In the treatment of these conditions, Mr. Lennox Browne seems to have become a convert to the surgical methods of treatment first largely practised in New York, with the saw of Bosworth and the trephine of Curtis. Concerning the latter he states that he knows of no innovation in modern rhinological practice to which he has been so much indebted for the relief of hard nasal obstructions. Forcible dilatation of the nasal passages with strong forceps-like contrivances devised by Hewetson, Dundas Grant, and Hill respectively, to correct deviations of the septum, is spoken of favorably, even though the procedure sometimes crushes the turbinate bones and fractures the outer wall of the nasal fossa; a practice which, in our opinion, is hardly to be commended on purely theoretical grounds. A number of illustrations are given in connection with the subject under consideration, with brief histories. These, with the additional illustrations in other portions of the work, enhance the instructive value of the volume, so well appreciated by the profession in the prompt absorbance of its second edition. J. S. C.

ÉTUDE D'HYGIÈNE SOCIALE. SYPHILIS ET SANTÉ PUBLIQUE. Par T. BARTHÉLEMY, Médecin nommé au Concours de Saint-Lazare, etc. Pp. 352, avec cinq planches. Paris: Baillière & Fils, 1890.

SOCIAL HYGIENE, SYPHILIS, AND PUBLIC HEALTH. By T. BARTHÉLEMY.

THE well-known author of this little work has devoted several years to the study of syphilis in its relations with the public health, and the

result is a treatise exhibiting a careful and comprehensive survey of the entire subject. He devotes a chapter to the methods of dissemination of the disease outside of clandestine prostitution, and, in a review made with tolerable care of the subject of early and late inherited disease, reproduces many of the facts so carefully formulated in the lately published treatise on the same theme by his master, to whom indeed this little book is dedicated, the great Fournier. The concluding chapters of the work are devoted to the measures adopted for the regulation of prostitution in France and elsewhere, the police codes of several countries being minutely considered.

Viewed as a whole, the work may be described as belonging to that singular class that are exotic when transplanted outside the Gallican peninsula, and which are bought as curiosities by most physicians of Anglo-Saxon birth, when they care to purchase them at all. The scientific questions discussed in such works are usually more exhaustively and critically considered by other writers, and the quasi-scientific themes introduced are handled usually with the mannerism of a journalist. For example, it would not be difficult for an English or American writer to produce a serious work on syphilis in its relation with social hygiene, and to give in its pages a fairly satisfactory exposition of the features of the disease as recognized by leading syphilographers; but it assuredly would be quite difficult to find one who would be willing to insert among its illustrations a poor woodcut of a young woman carrying overflowing beer-glasses to the customers of a French brasserie under the gas-lights with the title beneath, "L'Inviteuse." Or to give other illustrations such semi-popular titles as "L'Invalide de la Syphilis," the greater part of the portrait reproducing merely a forlorn-looking man in a dressing-gown and easy chair. Or to give to the illustrations of inherited syphilis the odd title, "Un Héritage." For, let it well be understood, our author is a competent, careful, and scientific writer, far removed from the class of men who commonly produce works of this class in the English tongue, and whose consequent positions are not without criticism. M. Barthélemy is, in fact, a native of France, and an honored member of the French faculty in the French capital. This is the whole story.

Without taking the time and space to discuss here anew the oft-vexed question of the regulation of prostitution, it is not without interest to note that our author, in common with so many who have before him embarked on the voyage over this pestilential pool, while sounding a specious appeal in behalf of the "innocents" of infection, betrays the shadows of an education completed on the wrong side of the British Channel. He practically admits the need of sexual gratification for the unmarried man. He quotes with apparent approval the well-known lines inscribed by Voltaire at the base of a statue of "Amour":

> "Qui que tu sois, voici ton maître;
> Il l'est, le sera, le doit être!"

He is apparently as unacquainted with the ideal of a pure manhood, sustained by almost every public utterance on the subject by his neighbors in the United Kingdom, as of the fruitlessness of all attempts at reform by washing the "outside of the cup and the platter." He, in fact, has not the vision to appreciate at its full value a principle which is so potent in all morals that it has set the English-speaking races in the forefront of civilization, swept the French people down before the

mercy of German battalions, settled their future as a nation of second order only, made their literature in many places a cesspool, and produced some, well—"queer" treatises on medicine. J. N. H.

A HANDBOOK OF DISEASES OF THE NOSE AND NASO-PHARYNX. By JAMES B. BALL, M.D. (London), M.R.C.P., Physician to the Department for Diseases of the Throat and Nose, and Senior Assistant Physician, West London Hospital. 12mo., pp. 243, illustrated. London: H. K. Lewis, 1890.

THIS is an admirable handbook in size and in context; and is remarkably free from egoism. It presents in concise, clear, and unredundant terms a fair exposition of the accepted theories of the present period in etiology and in pathology. The treatments advised in connection with the maladies discussed are such as befit the judicious conservative physician. There is an absence of extravagant commendation of special methods of manipulation and operative intervention. We are glad to recognize a due appreciation of one old topical remedy considerably neglected of late years for new ones, the much undervalued silver nitrate. Modern methods of treatment are by no means ignored, however, but their applications are properly restricted within closer limits than is the fashion with the majority of recent writers in text-books, in monographs, and in the journals.

Beginning with a synoptical description of the anatomy of the regions and their physiology, chapters immediately follow on general diagnosis and on the methods of topical treatment. Then the cutaneous affections are discussed and the various forms of disease of the mucous membrane and of the intermediate structures. A modest collection of formulæ and an index conclude the volume.

We have no hesitation in commending this handbook as a preliminary study for the medical student and the young practitioner. They will find little to unlearn when their studies are extended to more thorough and extensive treatises, and will have learned much to enable them to recognize the limits of legitimate interference. J. S. C.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,
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The Dosage and Administration of Creasote in Phthisis.

Dr. William H. Flint has recently brought before the New York Clinical Society the results of his experience with the use of creasote in seventy-three cases of phthisis, among which there were examples of all stages of the disease. Medical opinion is at present almost unanimously favorable to the use of pure beechwood creasote in phthisis, and convincing proofs of the efficacy of this remedy have been furnished by many authors on both sides of the Atlantic. Its use in heroic doses has been advocated by Professor Sommerbrodt, acting upon the assumption that enough creasote may be given so to charge the blood with the remedy as to antagonize the development of tubercle bacilli; and after Guttman had shown that tubercle bacilli could hardly be cultivated in sterilized serum containing $\frac{1}{1000}$ volume of creasote, and that the culture could not be carried on if the solution were a little stronger than 1 in 4000.

Dr. Flint's cases were divided into three classes: 1. Those in which creasote inhalations were alone employed. 2. Those in which the drug was administered both by inhalation and by the stomach or the rectum. 3. Those in which the drug was given only by the stomach or the rectum. Neither of these methods invariably furnishes the best results. The inhalation method was most successful for patients whose gastro-intestinal tracts were diseased, while the other methods were more satisfactory in cases whose digestive organs were in a fairly healthy condition. The solution used for inhalation was always that containing equal parts of creasote, alcohol, and chloroform, a combination very acceptable to patients, save in a few cases in which it caused nausea and gastric distress whenever employed. The inhalers used were Dr. Robinson's and that of the Brompton Hospital. In mild cases the inhalations were administered for fifteen minutes every two or three hours;

in severe ones, every hour during the daytime and every three hours at night. From ten to fifteen drops were placed upon the sponge about every five hours during the day and twice during the night. For administration by the mouth or the rectum an emulsion was used composed of cod-liver oil, 40 parts, and mucilage of acacia, 60 parts, each drachm containing two minims of creasote. In suitable cases the emulsion was given every two hours, and the dose increased up to the point of toleration, which, in the majority of cases, was about ten or twelve minims per diem. If the patients could be persuaded to adopt temporarily an exclusively milk diet, the creasote emulsion was administered in milk, being thoroughly mixed with the latter by means of energetic shaking with a lemonade-shaker such as is used by bartenders. In this way gastric symptoms were least readily excited. Rectal injections of milk containing the creasote emulsion were also found valuable. When the rectum becomes intolerant, laudanum may be added to the enema.

It is important that the treatment be uniform and uninterrupted, and the best results for each individual attend the administration of the maximum quantity of creasote which the patient will bear. If any channel is intolerant, another should be employed, in order not to interrupt the continuity of the treatment.—*New York Medical Journal*, vol. lii. No. 4, 1890.

[The possibility of causing renal irritation or of increasing any existing disease of the kidney by the continued use of creasote should not be lost sight of.—ED.]

TWO CASES OF POISONING FROM SMALL AMOUNTS OF ATROPINE.

For a lad of twelve years DR. OWENS prescribed two or three drops of a solution containing two grains of atropine to the ounce of water to be instilled into the eyes three times within an hour on a Thursday morning, and again three times during that day, three times during Friday, and once on Saturday. Of these ten instillations the last two were omitted by his mother, as the boy seemed strange on Friday afternoon. When seen by Dr. Owens on Saturday he had all the symptoms of atropine-poisoning, staggering, unsteady gait, dryness of throat and tongue, picking at imaginary objects, muttering, smiling, and occasionally laughing outright to himself. He could be aroused for a few moments so that he would answer questions, but soon relapsed. The face was slightly flushed; there was no rash; the pulse was small and rapid. Pupils were only moderately dilated, and responded but slightly to light. In a few days the patient was all right.

The second case was that of a remarkably healthy gentleman of seventy-three. In order to see if his cataract was mature up to the periphery, two or three drops of a two-grain-to-the-ounce solution were instilled three times in about twenty minutes. The pupil dilated readily, and after finishing the examination he spoke thickly and did not answer questions readily. He got up to walk and fell back in the chair, and soon became almost unconscious. Paralysis was so complete that he was quite helpless, and had to be carried to the carriage, his face becoming suffused, and the body covered with an erythematous rash; the pulse could scarcely be counted.

These cases are of interest, first, for the small quantity of the drug that in each case produced such severe effects; secondly, the different toxic symp-

toms produced. In the old man's case paralysis came on rapidly and was complete, whereas in the younger patient the paralysis was less marked, the tetanic symptoms being most prominent, coming on eighteen hours after.—*Lancet*, vol. ii. No. 9, 1890.

MOTOR PARALYSIS RESULTING FROM HYPODERMIC INJECTION OF ETHER.

For the hypodermic injection of ether there are two generally recognized methods: it may be injected subcutaneously into the cellular tissue immediately under the skin, or it may be injected deeply into the belly of the muscle. By the former plan a little emphysema may be produced by the rapid volatilization of the ether. If we inject deeply into a muscle, there is no pain, but there is risk of a deep-seated abscess forming. As ether is a good antiseptic the risk of this latter accident is small.

DAVID WALLACE, F.R.C.S., in reporting upon this subject, reports two cases in which injections of ether were used to treat sudden or threatened collapse; in each case twenty minims of sulphuric ether were injected deeply into the extensor aspect of the forearm. Next day the patients had paralysis of the extensor group of muscles of the forearm supplied by the posterior interosseous nerve.

In one of these cases the patient had not fully regained the use of the hand after nine weeks.

In the other case the patient was too ill for a week to have any attempt made to treat the paralysis; after this blisters, massage, and galvanism were used. The muscles supplied by the posterior interosseous were not only paralyzed but markedly atrophied. After three weeks' treatment the wasted muscles were found to have greatly increased in bulk and firmness. Eight weeks from the date of the paralysis, and after four weeks of galvanism, the middle and ring fingers could be voluntarily extended, and a week later the little finger could be extended, while slight abduction of the thumb was got by the action of the extensor ossis metacarpi pollicis, and extensor secundi internodii pollicis.

It is improbable that the nerve-trunk of the posterior interosseous was pierced by the needle, and the ether injected directly into the nerve, as normally the nerve-trunk would be situated about three inches above the point where the needle was introduced. The ether used was tested and found to be a good preparation. The explanation would rather seem to be that the ether after injection would diffuse most rapidly through the intermuscular spaces, and as it is in these that the nerve-branches chiefly lie, the ether coming into contact with these branches would cause coagulation and destruction of the constituents of the nerves, and in that way destroy their conducting power. The immediate local effect would probably be followed by some degeneration of the nerve going to a higher level, while neuritis would be set up as indicated by the pain felt by the patient during the first three or four weeks of the paralysis.

Such cases as the above are rare, but there seems to be no doubt that paralysis may be caused by the injection of ether deeply into the muscles, that the prognosis is favorable though recovery may be long delayed, and that galvanism hastens the cure.

The possibility of such an accident should teach us to pinch up the skin and inject subcutaneously rather than deeply into a muscle, unless it be the deltoid or gluteus maximus.—*Edinburgh Medical Journal*, No. 423, 1890.

Hypnotism in Therapeutics.

In view of the recent enthusiasm for hypnotism on the part of some of the profession, the warning of Dr. Kerr, President of the Society for the Study of Inebriety, is well timed.

Dr. Kerr saw in hypnosis only a disordered cerebral state, an abnormal psychical condition with exaltation of receptivity and energy. After all only a limited number of persons are susceptible to it; the after-effect was a disturbance of mental balance, a dissipation and exhaustion of nervous energy. Though suffering was sometimes temporarily assuaged by hypnotic suggestion, the underlying disease was not necessarily cured. The few cases he had seen apparently benefited would probably have yielded to ordinary treatment, but the patients resisted or were passive to that, while they looked forward to, believed in, and gave themselves up to the mesmerizer. Such cases would show a proportion of successes to the "faith-cure," "mind-cure," or any other cure. The greatest success of hypnotism was claimed in nervous diseases, which, however, were the very ailments Dr. Kerr had seen in the long run intensified and confirmed thereby. In inebriety or narcomania, no medical expert of repute had found hypnotism of any value. He had found its pretensions fallacious, its apparent benefit less frequent than that of sound scientific therapeutics, and at times only fostering the true inebriate diathesis. But he employed, as did every intelligent physician, non-hypnotic healthy suggestions of a safe, straightforward, reliable, and scientific character.

Dr. Kerr strongly deprecated public mesmerism, medical, philanthropic, or commercial. He preferred that the medical profession should set its face against the whole practice as a hazardous and unreliable remedy, never free from the risks of perilous sequelæ, liable to the gravest abuses, operative with only a limited number of patients, and the general tendency of which was inimical to the best interests of physician and patient.—*British Medical Journal*, No. 1547, 1890.

The Action of Salol on the Kidneys.

This question has recently been investigated by Dr. Hesselbach, from both experimental and clinical standpoints, and the results have a very practical interest. Salol is a drug intended to take the place of quinine and salicylic acid, which at first was recommended as entirely free from noxious properties. Its drawbacks and dangers remained to be discovered by clinical observation. It was first prepared by von Nencki in 1883, and was introduced into practice by Sahli in 1886. It is the phenylic ether of salicylic acid, and as is well known can be split up into components, phenol or carbolic acid (some 40 per cent.) and salicylic acid (some 60 per cent.), by the pancreatic juice, and to a less extent by the saliva, by the action of bacteria, by organic tissues, and by alkaline carbonates. These components are eliminated from the body, probably as phenyl-ether sulphuric acid, and salicyluric acid. Its

decomposition and elimination from the body take place somewhat rapidly, for half an hour after the administration of 30 grains of salol, salicyluric acid can be detected in the urine; but the complete elimination of its components requires a much longer time. For days after its ingestion (in one case five days) the dark-green or even blackish tint characteristic of carboluria is observable. The result of this slow excretion is that when salol is given continuously its components are apt to accumulate in the system, and give rise to medicinal and even toxic effects of an enduring kind. The action of salol is doubtless due entirely to the phenol and salicylic acid into which it is broken up, though Sahli surmises from the fat-like chemical character of salol, that in large doses it may be absorbed without decomposition. Even if this were so, however, it is by no means impossible that it would be split up in the tissues if not in the alimentary canal.

There have been two opposing views in regard to the risk of using salol, but unquestionable carbolic poisoning has been reported as following the use of large doses, and Dr. Hesselbach gives details of a case which terminated fatally.

The patient was a servant, twenty-two years old, stout, and somewhat anæmic, with no hereditary disease, and hitherto healthy, except for frequent headaches and swelling of the feet. On May 18, 1888, she was seized with acute articular rheumatism, for which she had salicylate of sodium, which relieved the pain, except in the ankle.

On June 8th she received 120 grains of salol within eight hours; she became unconscious and died on June 12th. On June 10th, no urine having been passed since June 8th, eight and a half ounces of pale yellow, slightly turbid urine were drawn with a catheter, in this were detected traces of albumin, salicyluric acid, and phenol.

The chief changes discovered at the post-mortem examination, which are reported in detail, were in the kidney. The epithelial changes suggested strongly an acute exacerbation. Inasmuch as the dangerous symptoms which preceded death followed immediately on the ingestion of 120 grains of salol, it seems justifiable to infer that the case was one of salol-poisoning, which lead to the epithelial changes, and ultimately proved fatal.

Why did the salol prove so exceptionally toxic, while in other cases it has shown itself innocuous? Is the salol chargeable with the toxic action, in particular the action on the kidney? Is it the phenol or the salicylic acid, or both of these? A series of experiments was instituted, beginning with an investigation as to the action of phenol on the kidney; this substance being the most apt to produce such changes, and was followed by an investigation of salol and salicylic acid.

The large number of cases of nephritis from carbolic acid which have now been put upon record prove that the drug is a renal irritant. Although, therefore, there were already numerous data in existence pointing to the action of phenol on the kidney, it appeared necessary to have recourse to experiment in order to discover the way in which the action took place in one and the same species of animal, and to compare the resulting microscopic preparations from different species. On examination after death there appeared hyperæmia and œdema of the pia mater, anæmia of the kidneys, especially of the cortex, and fatty changes (degeneration) in the cortical tissues.

That phenol, apart from its cerebral effects, should chiefly attack the kidney is due to the fact that in this organ its transformation into the innocuous phenyl-ether sulphuric acid takes place. That this is so, may be inferred from the analogous case of benzoic acid, which is changed into hippuric acid within the kidney. The excretion of phenol takes place through the epithelium of the convoluted tubes, and as this is damaged in the process, here also its transformation into phenol-ether sulphuric acid will be at least delayed and act as an irritant. Disease of the kidney, especially of the renal epithelium, must be unfavorable for the elimination of phenol, and so constitutes a predisposition to toxic effects when the drug is administered and a contra-indication for its use.

In the next series of experiments salol was administered to rabbits. The microscopic appearances were essentially the same as those seen in phenol-poisoning, everywhere the fatty degeneration of the epithelium of the convoluted tubules was unmistakable. That salicylic acid frequently gives rise to untoward and dangerous symptoms, especially in relation to the central nervous system, is well known; its action on the kidneys has, however, been less frequently described. Chopin has found that in aged patients it readily gave rise to albuminuria, also in chronic renal disease it acted as a diuretic, and increased the albuminuria.

After giving salicylic acid to rabbits the chief thing found in the kidneys on microscopical examination was the existence of hæmorrhagic extravasations in the interstitial tissue and the renal tubules, and not a destruction of the epithelial cells.

Comparing, then, the renal changes produced by phenol and by salicylic acid respectively, the former, as we have seen, leads to anæmia of the kidney and acute fatty degeneration of the epithelium of the convoluted tubules; the latter to hyperæmia of the kidney and hæmorrhage into the interstitial tissue and the tubules, followed by comparatively slight epithelial degeneration. Phenol acts primarily on the cortex, attacking the medulla only when given in large doses; salicylic acid affects chiefly the medullary portions, and only when in large quantity extends its action to the cortex. As regards the lethal doses the comparison is less precise, inasmuch as the mode of action of the two drugs is very different. Six grains of phenol (per pound) in five days proved fatal, while twenty grains of salicylate of sodium (per pound) were necessary, and killed the animal in two days.

These observations appear to make it clear that the renal changes in salol-poisoning are chiefly due to the phenol it contains. After the use of salol, anæmia of the kidney and acute fatty degeneration of the renal epithelium showed themselves; the cortex was the chief seat of the change, the medulla being but little affected. Only when the dose of salol was large did distinct traces of hæmorrhage appear in the medulla and the medullary rays of the cortex. In other words, only after large doses of salol did the toxic effects of the contained salicylic acid become apparent.

But closer examination shows that the several morbid changes were by no means proportionate to the respective amounts of the two constituents of the salol, whence it may certainly be inferred that not the whole amount of these constituents were concerned in producing the toxic effects observed. Probably a considerable proportion of the salol is absorbed or eliminated unde-

composed. Which constituent is most potent in producing the symptoms of the salol-poisoning is hard to determine with certainty, as the symptoms produced by the one are not unlike those produced by the other. But even in this respect the action of phenol seems to prevail.

In Dr. Hesselbach's patient the contraction of the kidney and the morbid changes in the secretory mechanism thereby induced doubtless account for the fatal effect of the 47 grains of phenol contained in the salol ingested. Phenol-poisoning may occur much more readily if the renal epithelium is already diseased than if the kidneys are sound. Further, Küster has observed that phenol, and, therefore, salol, is especially toxic to anæmic or febrile patients of the female sex, and the death of this patient becomes intelligible.

The following are Dr. Hesselbach's conclusions:

1. The large proportion of phenol contained in salol renders it so toxic a substance that its unrestricted therapeutic use is fraught with danger.

2. In renal disease, acute or chronic, salol is contra-indicated.—*Practitioner*, Nos. 265 and 266, 1890.—*Fortschritte der Medicin*, Nos. 12 and 13, 1890.

Therapeutics of Some Urinary Disorders.

In comparing the various systems of which the human body is built up, such for instance as the nervous, respiratory, circulatory, digestive, and urinary, the last especially especially enjoys a condition for the action of drugs which is not equally shared by the other systems, except, perhaps, the digestive system. Dr. Reginald Harrison devotes a part of a clinical lecture to a consideration of the uses of certain drugs in urinary disorders.

The power of quinine in connection with operations on the urinary organs has long been recognized, and there can be little doubt that this is directly associated with the fact that it is so largely eliminated by the urine.

Dr. Palmer, of Louisville, Kentucky, found that he could so sterilize the urine by the administration of boracic acid in ten-grain doses as to prevent the occurrence of urethral fever after such operations on the urethra as internal urethrotomy. The power of sterilizing the urine so as to render it innocuous when placed under conditions where otherwise it would be liable to generate septic influences is not limited to boracic acid and quinine. Hypophosphate of soda in half-drachm doses, in some purulent affections of the urinary organs may owe its beneficial effects to its influence as a bactericide.

Dr. Harrison has used pichi during four years in the form of a fluid extract, in drachm doses of the latter, with considerable benefit. In renal colic and the passing of calculi through the kidneys and along the ureters, attended with hæmaturia; though not exercising any solvent power, it seems by its action on the tissues in some way to favor the escape of the stone and thus suppress bleeding; it has been found useful also in the hæmorrhage which frequently accompanies cancer of the bladder. The sedative action of the drug on the mucous membrane of the bladder has proved beneficial in many instances of irritability connected with a large prostate. After the bladder has been properly cleansed by irrigation and disinfected, it has been frequently found that the calls to urinate were far less urgent when the pichi was being used.

Acting somewhat similarly, though less astringent in its properties and, therefore, of less value when there is hæmorrhage, is an extract prepared from the berries and fruit of the saw palmetto (Serenoa serrulata); it seems to act something like pareira and is a good substitute for it. Of the chemical products, saccharin, in half-grain doses, is useful in preventing the ammoniacal change in the urine in cases of cystitis. Where the mucous membrane of the bladder throws off large quantities of mucus and the urine undergoes rapid ammoniacal decomposition, the urine may become healthy and acid under the use of saccharin, and on discontinuing the drug the urine will speedily return to its original condition. Hence, it may be found useful in readily providing against conditions which cannot be radically altered. Dr. Thomas Stephenson and Dr. Woolridge have shown that saccharin may be taken for a considerable period without interfering with the digestive or other functions of the body.

Another chemical product is borocitrate of magnesia, prepared by dissolving a natural borate of magnesia, found at Strassfurt, in citric acid. It forms a white powder with a sourish taste, and is given in teaspoonful doses in a tumbler of warm water two or three times a day. Its employment has been advocated by Dr. Kochler, in cases of uric acid calculi and gravel. The discharge of these bodies, whose presence has previously been suspected, has frequently taken place after the use of this salt. It may be, all it does is to secure that the individual shall take at stated times more fluid than perhaps he would otherwise do; an important point, upon which Sir William Roberts has laid stress. Dr. Harrison is disposed to think that it does more than thus induce a person to flush his kidneys with a bland fluid by no means disagreeable to take, and that it is capable of modifying or altering the crystalline form in which uric acid is discharged and of exercising a solvent power on some kinds of urate stones.—*The Medical Press*, No. 2671, 1890.

Hypnotics.

Folsom has given an excellent and practical outline of the use of hypnotics.

Their use is recommended in acute disease, particularly fevers, where sleep is often a necessity. In chronic disease there is frequently the same temporary need. In incurable diseases with pain and discomfort, in the restlessness of senility, hypnotics and narcotics—used freely in the last years of life—are almost the chief justification of our service. Often in mental disease they are, for a time, all but indispensable. In some neurotic people their occasional use can hardly be avoided. In acute nervous and mental disturbance from profound shock, full and continued doses of narcotics may dispel most threatening symptoms.

The chief indications in insomnia are: to give hypnotic drugs rarely and only when other measures have failed; to use, as far as it is possible, the small dose, repeating as needed, so as to avoid the over-action or the cumulative effect of large doses; to be satisfied with the least amount of sleep that is safe, if produced by medicine; to avoid drugs as a rule, except for euthanasia, when the mental condition is not such that all the after-effects can be noted; to bear in mind the fact that hypnotics given to produce sleep

may increase wakefulness; to be on guard for unpleasant or toxic results, when any drug is given in sufficient dose to produce prolonged and profound sleep; to give the large dose when it is indicated; not to expect the same action or tolerance of new medicines in sensitive private patients as in hospital practice.

The advantages of spirits, wine, beer, ale, porter (including some of the so-called malt extracts), koumyss, mâtzoon, are well known in old age, in conditions of exhaustion, fevers, and generally where a cardiac depressant must be avoided, especially if supplemented by vasomotor stimulants, like ergot, digitalis, strychnine, coca, cocaine. A glass of champagne often acts like magic in the sleeplessness of a dilated heart. But the habitual necessity of alcohol to produce sleep in brain-workers indicates the nearness of the danger-line. The disadvantages of alcohol are well known and readily guarded against.

The preparations of opium are indispensable in many cases with pain, in old age, in many forms of heart-disease.

The bromides diminish the reflex excitability of the medulla, and are vasomotor excitants. Their best therapeutic effect, always avoiding bromidism, is obtained as hypnotics, from divided doses given through the day or evening, whether in large quantity or small. Alone, or combined with other medicines, they have a wide usefulness. The debilitating influence from them may in some cases be, partly at least, met with iron or bark. By virtue of obstructing the heart's action and producing a certain amount of muscular depression, they are not without objections for continued use, or, in some cases, occasionally.

Paraldehyde has a much less depressing action on the circulation and respiration. It is especially valuable in conditions of mental excitement, where the duration of sleep may be prolonged by adding morphine. To get a definite hypnotic effect, the dose must be increased. Its acrid taste and the disagreeable persistent odor from the breath are objections to its use, and even when largely diluted it is often objected to on the ground of its being a gastro-intestinal irritant. The temptation to its habitual use is less than in alcohol, morphine, cocaine, and chloral, the symptoms produced being tremor, confusion, impaired memory, diminished intelligence, etc.

Amylhydrate appears to stand in hypnotic power below chloral-hydrate, and above or below paraldehyde, according to different observers, but with even less depressing action on the heart than the latter. The toxic effects from it, of nausea, headache, weak pulse, are less marked than in paraldehyde, and it is less a gastro-intestinal irritant, although sufficiently so to require often its administration by rectum.

Urethan, a mild hypnotic in doses of twenty grains, is at times useful, and may, from its ready solubility, be given hypodermically. It is without especial depressing action on the heart, except in enfeebled persons. It has, like all rather mild remedies, proved in some cases uncertain in its effects, but is useful, and ordinarily without disagreeable after-effects.

Hydrobromate of hyoscine has a limited usefulness, especially in maniacal excitement, violent hysteria, delirium tremens, insomnia with agitation, in the insane and aged. In a certain proportion of cases there is no quieting effect from the drug, but the restlessness is increased.

Chloralamide is best given in a slightly acid solution, with spirit, or as an elixir, thereby sufficiently disguising its bitter taste. The danger from a large dose is less than from a large dose of chloral. Disagreeable after-effects are less common. Some observers value chloralamide highly, while others regard it as in no way deserving especial praise. Sulphonal is a less powerful hypnotic than chloral, with even less influence on pain, but without so much, although with slight, depressing action on the heart. From its difficult solubility, the physiological action is slowly produced; a single dose may be efficient for two successive nights, and there is risk of the cumulative effect if the dose is too often repeated. In doses of thirty grains or less it is in the main safe, although twenty grains given each night for several weeks to a girl of sixteen, produced stupor, and twenty grains, three times a day continuously, to a strong male adult, caused ataxia, tremor, and mental apathy. It has been found not always certain, and in over-action, with an after-effect of somnolence, fatigue, depression, lack of appetite, which, from an over-dose, may amount to semi-coma and cardiac depression. Given in doses of five grains, and repeated, if necessary, two or three times, or of ten or twenty grains, and perhaps repeated, it has proved in his hands a hypnotic of great value in producing sleep which is refreshing and natural. When care has been taken not to give it too often or in too large doses, he had never seen any untoward results from it.

It is the most important and widely useful of the new hypnotics. Phenacetin may be given in wafers and compressed tablets, as a powder or with brandy. In the insomnia of overwork or nervous irritation, in febrile states, or from headache, it is a hypnotic of great value, in doses of five to ten grains, repeated if necessary. In sleeplessness of intense neuralgia, less than fifteen grains, repeated two or three times, as needed, is not likely to be effectual, the fact having been first ascertained that there is no intolerance to the drug. —*Boston Medical and Surgical Journal*, July 10, 1890.

MEDICINE.

UNDER THE CHARGE OF

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Tetany.

Jaksch (abstracted in *Centralbl. f. d. med. Wissensch.*, 1890, 24, 441) has during four years observed 41 cases of tetany; 36 of which were in males and 5 in females. It is most common between the ages of seventeen and eighteen years, at least in males, though the women affected were between twenty-six and forty-seven years old. The males belonged principally to the class of artisans; the majority being shoemakers, then carpenters, tailors, etc. The

disease appeared most frequently in the winter and especially in the spring months. Hereditary conditions and preceding infectious diseases appeared to possess no influence. Although the upper extremities were those in which the spasm predominated, the lower were in the majority also attacked. In one case the left lower and the left upper extremities were the only ones attacked. In some cases the masseters were also involved, and the tongue was thick and exhibited muscular twitchings, as did other muscles of the body. The most important and most constant symptoms of tetany were the irritability of the facial nerve and the production of contraction by pressure on the arteries and nerves of the limb. In regard to the relation of the motor apparatus to electrical stimulation the author's observations agree with those of others.

He found the patellar reflex present in all cases except two, ankle-clonus in no instance, and the cremasteric and abdominal reflexes usually increased. The average duration of the disease was two to three days. In 18 of 36 cases there were relapses, often several. The author found fever of intermittent or remittent type in 9 out of 35 men with the affection, and a subnormal temperature usually followed this. Respiration remained, as a rule, unaffected; the pulse-rate was somewhat increased during the fever. The author considers these symptoms due to the action of a poison whose nature is not yet determined. He describes certain cases as acute relapsing tetany, distinguished by their rapid cyclic course from the more frequently observed chronic cases, among which there are occasionally observed very severe instances. Cases of this latter sort occurring in the course of grave cerebral diseases should, like athetosis, be considered as showing symptoms of cerebral irritation.

TRAUMATIC TETANUS OCCURRING IN THE COURSE OF TYPHOID FEVER.

BELHOMME (*Arch. de Méd. et de Pharm. Milit.*, 1890, No. 6, 464) refers to the rarity of the combination of tetanus with a microbic disease, and reports two instances of its association with typhoid fever. His search through medical literature has disclosed no other instances of this combination. The first case, briefly reported, occurred in a man who, having a wound on his finger, developed typhoid fever, and died after fifteen days with the symptoms of tetanus. The second case, a patient under the author's own observation, was a man of twenty-five years suffering from typhoid fever, who fell from a window while semi-delirious and received several wounds. About eleven days after this accident the symptoms of tetanus developed and increased until terminated by death. The etiology was interesting in this instance. The patient, being a cavalryman, was in constant contact with horses, and wore clothes impregnated with their sweat, and may have acquired the tetanic infection in this manner; or it may have been through the contact of his wounds with the earth on which he fell and which was rich in manure. Bacteriological inoculation-experiments made with the earth from the place on which the patient fell appeared to prove beyond a doubt the telluric origin of the disease in this case. It should be noticed that the first case also occurred in the person of a cavalryman.

The author claims that these two observations put beyond doubt the possi-

bility of the simultaneous appearance of typhoid fever and tetanus in the same individual, and without their exercising the slightest influence upon each other.

The Physiology and Pathology of Sleep; with Observations on Nona.

Mauthner (*Intern. klin. Rundschau*, 1890, 949), in discussing the various pathological processes whose most prominent symptom is sleep accompanied by extreme muscle-weakness, divides these into those of a more chronic or subacute course, and those of a very stormy acute form. In the first category belong:

1. The "endemic morbid somnolence of the negroes," which is followed by death in the course of two to three months. The symptoms are general apathy and depression, the most extreme muscular weakness without motor paralysis and with intact sensibility, a staggering gait, and constantly increasing somnolence until the power of motion is entirely lost, and the motionless sleep lasts until the fatal end.

2. "Gayet's disease," as illustrated in the case described by Gayet in 1875, the symptoms, course, and termination of which possess a close resemblance to the "maladie du sommeil," and which is of especial importance in that an autopsy was obtained.

3. "Gerlier's disease," occurring in the form of small endemics in Switzerland, and described by Gerlier under the name of "*vertige paralysant.*" The symptom of somnolence is less prominent in this affection than are the vertigo and extreme muscular weakness, rendering young, powerful stablemen unfit for any labor.

4. The "*Attaque du sommeil*" of hysterical persons, the duration of which may be several months without ending fatally.

All of these more chronic forms—with the exception of the tropical form, of which the author has no certain knowledge in this respect—have a striking focal symptom in common; viz., ptosis with paralysis of the ocular muscles.

The acute forms are represented by the following:

1. "Wernicke's disease," whose symptoms are, from the beginning, a combination of ocular paralysis, staggering gait, and somnolence, or else a final stage of somnolence after preceding agitation.

2. Unusually long sleep after intoxication, in which the individual may sleep—as in one case under the author's observation—as long as five days, during which time it is impossible to wake him.

3. "Nona," in case this disease actually exists. The possibility of the existence of this affection cannot be denied, since Morbus Wernicke, occurring epidmeically or endemically, would end in death the third or fourth week, with somnolence as its most prominent symptom.

The nature of both the chronic and the acute forms of morbid somnolence is undoubtedly that of a *poliencephalitis superior*. The inflammation of the central gray cavities of the third ventricle, the gray matter of the walls of the aqueduct of Sylvius, and that of the floor of the fourth ventricle, give as the most constant general symptoms, general apathy and depression, with exces-

sive muscular weakness, and, in a more advanced stage of the disease, extreme somnolence; while as a result of the extension of the process to the nuclei of the nerves, the focal symptom of ocular paralysis appears.

Basing his opinion on clinical experience and on the pathological appearance in disease of the central gray cavities, the author proposes a theory for the cause of physiological sleep. This theory is, that sleep is to be considered as an evidence of tiring of the central gray cavities. Through the temporary suspension of the function of this portion of the brain, both the centripetal and the centrifugal nervous paths communicating with the cortex are cut off. Consequently sensory impressions are not conducted to consciousness, although the sensory organs on the one hand, and the cells of the cerebral cortex on the other, have not suspended their function. In the same way the motor centres are normally innervated in dreams, but on account of the interruption in the conduction in the central gray cavities, no motion is produced in spite of the normal power of conduction of the peripheral nerves. Finally the focal symptom of ocular paralysis is not absent; for the falling of the eyelids in those becoming sleepy is a true ptosis, while the simultaneous occurrence of double vision indicates the marked disturbance of innervation of the external ocular muscles.

Six Cases of Friedreich's Ataxia occurring in Three Different Families.

G. W. Rook and C. L. Dana (*Journ. Nervous and Mental Diseases*, 1890, 173) report the histories of six cases of Friedreich's ataxia occurring in three different families. The first case was that of a boy of twelve years. His father had suffered with ataxia during the last ten years of his life, and there were other spinal troubles in his family. The patient showed no symptoms of the disease until about a year previously, when his gait became awkward and irregular, and he frequently stumbled, especially in the dark. When examined by Dana, six or more months after, there was an ataxic gait, made worse by closing the eyes, and he could not stand with his eyes shut. He had no pain, spinal curvature, nystagmus, characteristic affection of speech, local atrophies, affection of vision or of the optic nerve. The knee-jerks were present. There was dorsal flexion of the right great toe, and slight tactile anæsthesia of the right foot. The urine and the electrical reactions were normal.

In the second case, also seen by Dana, the disease first developed when the patient was fifteen years old, after a blow on the head, and was associated with polyuria and disturbance of speech. When examined, at the age of twenty-one, the ataxia and peculiar rolling gait were very marked.

The four remaining cases were under the care of Rook, and were all of the same family. In the family history the only predisposing causes discoverable were phthisis and alcoholism. Of eight childen, four were ataxic. The first of these, a female, aged twenty, had an attack of measles in her eleventh year, and began in the same year to experience a sense of weakness in the lower limbs, and a staggering gait. In her twelfth year the arms were likewise affected. At the time of examination there was kypho-scoliosis, double talipes valgus, a claw-like appearance of the hands, and an expressionless

appearance of the face. The speech was tremulous and slow, the disposition somewhat irritable, acts of cerebration were performed with an effort. There was no paralysis, but decided atrophic changes in the muscular system, and the electrical reaction was much less than normal. She was unable to stand or walk without support, and the movements of the arms became more ataxic when the eyes were closed. Cutaneous sensibility was diminished. There was no pain, but numbness was experienced. Vertigo was present at times. There were no ocular symptoms. The superficial reflexes were diminished, and the knee-jerks abolished.

The second case, a male, aged sixteen, began to exhibit a staggering gait in his eleventh year, and affection of the arms about one year later. When examined there was found kyphosis, a very ataxic gait, occasional attacks of syncope, normal nutrition, slow tremulous speech, but little affection of intellect, spasmodic painless contractions of the lower limbs, diminution of the electrical reactions of the muscles, vertigo, diminished cutaneous sensibility and plantar reflex, and abolished knee-jerk. There was no paralysis or atrophy. The ataxia was made worse by closing the eyes, and under this condition he could neither stand nor walk.

The third case, a girl, aged fourteen years, began in the same way and at the same age as did the others. When examined, her gait was very ataxic, and the motions of her arms nearly equally so. Station became worse when the eyes were closed. There were kyphosis, double talipes valgus, wrist-drop, claw-like hand, palpitation of the heart, fever due to disease of the lungs, slow and tremulous speech, diminished electrical reaction of the muscles, frequent attacks of vertigo, occasional numbness in the limbs, diminished plantar reflex and abolished patellar reflex, diminished cutaneous sensibility, marked muscular atrophy, some nystagmus, no paralysis, and no pain.

The last case, a girl of nine years, was only beginning to exhibit symptoms of the disease. Speech was slow but not tremulous, ataxia of locomotion or station was only apparent when the eyes were closed. In the excitement of play, or with the eyes shut, the motion of the arms become slightly ataxic. There was no atrophy, contractures, paralysis, or alteration of the electrical reaction; tactile sensation was diminished, the plantar reflex nearly normal, but the knee-jerk greatly diminished.

The treatment employed in these four cases was silver nitrate, cod-liver oil, and suspension. The first and third cases improved, but no alteration was noticed in their ataxia. The second case improved in his gait, but not in his reflexes or tactile sense. In the fourth case, no increase of the ataxia was observed during six months of treatment.

Hereditary Chorea.

In reporting several cases of different nervous disorders, Bower (*Journ. of Nervous and Mental Diseases*, 1890, 131) records three of hereditary chorea. The first occurred in a negro, aged thirty-six years. His mother, with her two sisters and one brother, suffered from the same affection. In the mother the disease developed at the age of twenty-six, and gradually grew worse until she died of exhaustion at the age of sixty-eight. In the aunts and

uncle it appeared probably between the ages of twenty and thirty-five years. One of the aunts was dead; in the uncle the arms alone were affected.

The patient, who had been a hard drinker, became suddenly paralyzed in the lower extremities at the age of twenty-eight, but recovered after three months. At thirty years of age twitching of his hands began, and spread slowly, until the whole body became affected. When examined, he exhibited constant choreic movements of the upper extremities, with swaying of the body in walking, and pseudo-ataxic movements of the legs. The movements were not increased by voluntary efforts, but seemed to be by excitement. When sitting he was less unquiet, though still moving. His speech was slow; his handwriting was fairly good, but accomplished only with great effort to keep himself in proper position. His mental condition did not appear to be impaired.

A second case is assigned by the writer to this category on the ground that it appeared to have the symptoms of Huntington's chorea, though there was an entire absence of a history of heredity. The patient, aged thirty-two, began to have twitching and weakness in the upper extremities about three years before, followed in about three months by involvement of the head and legs. When examined it was found that while sitting the legs and feet were usually quiet, though there was a constant almost rhythmical motion of the head, occasional restless movements of the arms, and constant irregular athetoid motion of the fingers and hands. On walking the choreic movements were everywhere much increased, and the gait exhibited a peculiar twisting, half-rotating movement of the trunk and limbs. Voluntary effort, such as writing, caused the movements to become less marked, but excitement greatly exaggerated them. Speech was slow; the tongue could not be fully protruded, and seemed to be not entirely controllable. Knee-jerk and muscle-jerk were considerably exaggerated, and there was slight ankle-clonus.

The father of the third case was affected with the same disease as the patient herself, and her baby of four months of age had almost constant choreic movements of both hands. The patient, aged forty-one, began to have slight twitchings when about thirty-six years old, and these gradually increased. The study of the case showed that the movements of the head, arms, legs, and speech were affected much as in the other cases described. The right side was much more markedly disordered than the left. There was slight beginning dementia.

Infectious Icterus.

Duchamp (*Rev. de Méd.*, June, 1890, 483; 520) says that beside the classic catarrhal icterus, of which the source is the influence of the seasons, gastro-intestinal catarrh or emotional disturbances, there has been coming into prominence the doctrine of an icterus which is to be considered as a general disorder, the result of an auto-intoxication or an infectious element coming from without. The author has seen certain cases which seem incontestably due to the latter cause, and which constituted a limited epidemic of icterus.

About the last of the month of May an obstructed sewer had been opened for cleaning one of the streets of Montpellier, and black filth of a nauseating

odor was taken from it. Although this remained exposed to the sun but a very short time, and from the outset was disinfected with chloride of lime, yet six of the workmen, who had been employed for different lengths of time, were taken sick; three with icterus, two with gastro-intestinal disorders, and one with simple malaise.

In the three cases of icterus, the details of which are reported, the symptoms appeared much the same in all.

In examining the causes which could have possibly produced the icterus, the author finds that the only one common to all the cases was the participation in the cleaning of the sewer. He believes that the six workmen came into contact at some period with a telluric element of infection, a mephitic substance from the filth; and that this, finding in three of them a favorable soil, gave birth to the disease.

The author shows that the affection could not be some other infectious disorder merely complicated by icterus, but that the icterus was itself the infectious disease; it was, namely, an essential infectious icterus. Although the cases which he reports had no initial headache, no herpes, no fever with relapse, no microörganisms in the blood, no amelioration by crisis, yet they cannot be considered as essentially other than instances of the affection first described by Landouzy as *ictère grave*, then by Mathieu as hepatic typhus, and later studied by Weil, and going under his name.

The author prefers the title "infectious icterus." It indicates the clinical nature of the malady, and is, besides, a general term, and therefore appropriate, since all the cases of infectious icterus have by no means a perfect resemblance. If the author wished to adopt a classification of the varieties of cases seen, he would range those which he now describes under the category of "benign polycholic infectious icterus."

As with other infectious diseases, infectious icterus has periods of incubation, invasion, and decline. The period of incubation is believed by him to have been five days in the cases he observed. The invasion was marked by a serious condition of the general health, extreme depression, moderate fever, severe myalgia increased by pressure on the muscles of the lower limbs, and sometimes vertigo and epistaxis. Only in the second case was fever observed, lasting three days, and gradually diminishing. Intense polycholic icterus was the most characteristic symptom of the affection. Nasal and cutaneous hæmorrhages were observed. The urine was albuminous in one case. The gravity of the general state of the patient was especially to be noted. No alteration in the condition of the spleen or liver could be detected. This period of the disease lasted about two weeks. The period of decline was indicated by diminution in the degree of icterus, though the general condition might improve before or after this. The period of decline lasted three to four weeks, and was attended by a tardy convalescence, and a diminution in the size of the liver.

The author admits that the penetration of a volatile ptomaïne into the organism might produce all the symptoms described, but claims that the long period of incubation indicates that the disorder is caused by a microbe.

In the same number of this journal SÉZARY describes a case under the title of Weil's disease. The patient, a butcher, was suddenly attacked by sore-throat and fever. The following day there were prostration and depression.

Two days later subcrepitant râles developed in the chest, and the action of the heart became rapid to a degree out of all proportion to the temperature, while the urine contained albumin. After about a week icterus developed; the liver became enlarged; the spleen remained apparently normal, and the patient complained of tearing pains in his arms and legs. The tongue was coated, the appetite lost. About the tenth day a scarlatiniform eruption appeared upon the buttocks and in the groin, and lasted about three days. The fever disappeared after about fifteen days, but the patient continued very feeble for several weeks more.

The author is of the opinion that the infection in this case was probably introduced by way of the inflamed tonsils. Not only did the symptoms resemble those described by Weil, but the fact that the patient was a butcher by trade rendered the diagnosis still more probable, since the disease appears to have a predilection for men of this profession. The author is convinced that Weil's disease is an infectious one, and believes that the presence of the disease among butchers offers a certain presumption that the infectious agent is a microbe of animal origin. The immoderate use of alcohol, as in the case reported, perhaps predisposed the organism to the attacks of the infectious agent.

Observations on the Movements of the Intestine in Man.

Rossbach (*Deutsch. Arch. f. klin. Med.*, 1890, xlvi. 323) says that there is, as far as he knows, only one case described—that of Busch—in which there had been an injury to the intestine from which the patient had recovered, and which yet permitted satisfactory observation of the intestinal movements. This was a case of abdominal hernia with an artificial anus in the upper part of the small intestine. Through this abnormal opening the movements of the intestine under various conditions could be well seen.

The author has been fortunate enough to find an individual, a woman, suffering from constipation and movable liver, whose abdominal parietes were so remarkably relaxed and thin that the movements of the bowel could be observed with accuracy. Careful study of these, with the graphic plotting of curves representing them, seemed to render certain observations beyond doubt.

1. In the early morning hours the intestinal peristalsis as well as the gastric movements appeared to be at rest.

2. As soon as food is taken into the empty stomach and passes thence into the intestine an evident peristalsis begins, alternating with intervals of quiet. Sometimes the movements begin within a quarter of an hour.

3. No difference could be perceived in the intensity of action of different articles of diet upon the intestinal movements; except that coffee, whether taken fasting or after the midday meal, almost always produced the strongest peristalsis.

4. In general the irritability of the intestine appeared to have grown very slight by evening, since often no peristalsis was to be observed either immediately or a long time after the ingestion of the evening meal.

5. Except as mentioned, there appears to be no regularity in the intestinal peristalsis. The movements may be present before, during, or after a meal,

may be marked or slight, may develop at once after eating or only after one to two hours.

6. The peristaltic motion never lasts long with the same intensity. Large waves alternate with small ones, or with intervals of rest.

These observations apply to the intestine under the influence of ordinary nourishment only. The author has examined also the effect of various agents upon the movements with the following results:

1. Slight degrees of cold, as the mere exposure of the abdomen, produce peristalsis after a few minutes, or strengthen it if already present.

2. Greater degrees of cold, as sprinkling the abdomen with cold water, likewise increase the peristalsis only in slight degree.

3. The drinking of cold water produces at once a lively peristalsis.

4. Rubbing of the abdominal walls has no effect.

5. Moderate pressure in the space between the two *recti abdominis* is followed by an unusually active movement.

6. Pressure and squeezing of the intestine itself produce no movement.

7. After coughing the peristalsis becomes evidently stronger during a considerable time.

8. Through pressing [evacuation of the bowels] an increased peristalsis is produced.

9. Respiration does not cause an active peristalsis to cease, but a prolonged holding of the breath does have this effect, though the movements return later.

10. Purgation, accomplished by means of enemata, develops very violent peristaltic movements, accompanied by rumbling and distention of the abdomen.

11. One to two drachms of castor oil taken internally have no effect upon the bowel during the first half-hour, but then develop active peristalsis combined with rumbling in the abdomen.

12. Intense sensations of hunger always occasion active peristalsis.

13. The excitement of the emotions (as moderate fright, the sudden refusal to allow the patient to eat when hungry, etc.) causes the immediate disappearance of peristalsis, even when strong. After five to ten minutes the movements return.

14. The employment of electrical irritation produces very varying results. (*a*) The faradic current supplied to different parts [as shown in an appended table] brought out or strengthened peristalsis in a few cases, but its action was very inconstant. (*b*) The galvanic current [as also shown in a table] in like manner usually produced no or but slight peristalsis, and only in a few instances when applied through the rectum succeeded in developing active movements.

Bacteriology in the Prognosis and Treatment of Purulent Pleurisy.

Netter (*Rev. Gén. de Clin. et de Thérap.*, 1890, No. 21, 341) has examined the effusion in 109 cases of purulent pleurisy, and has found a large variety of bacteria. Thus he has observed 51 cases in which the streptococcus was present; 32 with pneumococci; 14 characterized by the association of different species

of microbes, and 12 instances of tubercular pleurisy. In the first three forms the histological examination and the cultures have shown what organism was concerned, while in the fourth the tubercle bacilli were often found in the pus by microscopical examination, although they might be absent. The failure to find tubercle bacilli does not justify the conclusion that the pleurisy is not tubercular, since inoculation of the peritoneum of rabbits with the pus sometimes gave positive results.

Clinical experience has shown that the pleurisy occasioned by pneumococci is much the most benign. It is most frequent in children, it often terminates by vomica. The pus should be removed by repeated aspirations before practising incision as a last resort.

Pleurisy from streptococci is more serious and more frequent in the adult. It is the type of classic pleurisy, and it is in cases caused by it that there is the greatest need for surgical intervention. The pleural cavity ought to be emptied very early by thoracotomy, and the organisms which have developed upon its walls should be destroyed by the employment of a powerful antiseptic, such as sublimate; for without this treatment the germs are reproduced with great ease in the places where they have not been disturbed, and thence infect anew the pleural surface. There are, however, cases of pleural effusion due to streptococci which have recovered spontaneously after one aspiration. But as bacteriological methods do not determine the virulence of the streptococcus in a given case, it is better to employ early interference by thoracotomy.

Putrid pleurisies demand the same early interference. They may heal without fistula.

Tubercular purulent pleurisies do not heal by incision, but are improved by aspirations performed at long intervals.

Carcinoma of the Pancreas.

N. G. Richmond (*Buffalo Med. and Surg. Journ.*, 1890, xxix. 728) reports a case of primary cancer of the pancreas. The patient, a man of fifty-six years, had been in poor health for some years, and had suffered from tenderness over the epigastrium with occasional attacks of bilious colic. For some months he had at intervals passed from the bowels what he described as "soap." The ingestion of fats in the food increased this, while starchy foods controlled it. The peculiar stools came liquid from the bowel, and when cool formed solid plates of a golden yellow color, which could be moulded like wax. They covered the feces, and were not mixed with them. A tumor the size of a fist was found in the epigastrium, extending transversely from the region of the gall-bladder to the left of the median line. Emaciation, pain, and loss of appetite increased; digestion was attended by a burning sensation; jaundice was present at times.

The autopsy showed a cancer of the head of the pancreas with a general breaking-down of the whole of the organ. The outer wall of the duodenum, the liver, spleen, and lesser curvature of the stomach were involved to some extent. The growth surrounded and occluded the common bile-duct.

Of the fifty cases of cancer of the pancreas which the author has been able to collect the most prominent symptoms have been: emaciation; pain; jaun-

dice; fatty, chalky, or clay-colored stools; tumor in the epigastrium. The pain in this disease is more continuous than in cancer of the pylorus, and radiates in more directions. Jaundice is common, due to the surrounding of the common bile-duct by the cancerous mass. The emaciation has been noted in every case, and is attributed by the author to the robbing of the system of the fats which the pancreatic juice is accustomed to saponify.

As regards fatty diarrhœa, it has been claimed that this symptom is pathognomonic of disease of the pancreas. The author, however, concludes from his study of the reported cases, that though it is, when connected with tumor in the region of the pancreas, a strong argument in favor of the existence of cancer of the organ, it yet is absent in the majority of cases. He agrees with those who hold that there is no symptom pathognomonic of pancreatic cancer.

An aid in differentiating the disease from tumor of the pylorus is that it is more obvious in the recumbent position, since in the erect position the liver and stomach come over it. A full meal also helps to make it disappear.

The duration of the affection is from one to two years.

Of the different varieties of cancer of the pancreas scirrhus of the head of the gland is the most common; encephaloid next in order; and cylindrical-celled epithelioma the least frequently seen.

Treatment consists simply in relieving pain, meeting symptoms as they arise, and in the use of an easily-digested and easily-assimilated diet. Artificial digestives are to be recommended.

SURGERY.

UNDER THE CHARGE OF

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Acute Strangulation of the Intestinal Wall.

Schaeffer (*Deut. med. Woch.*, No. 27, 1890) reports two cases of Littré's hernia, both of which were operated upon, and terminated favorably. In commenting upon these cases, Schaeffer notes that in neither was there intestinal obstruction. Indeed, the diagnosis was made from the fact that, together with the symptoms of strangulated hernia, there were repeated spontaneous passages of gas and fæces.

According to Laurents, who has observed twelve cases of this form of hernia, obstruction develops nearly always in Littré's hernia; the evacuation, if observed, depending rather upon dislodgment of fæcal masses lying in the bowel beyond the seat of constriction than upon preservation of the continuity of the intestinal canal.

The cases reported, however, passed flatus and solid matter repeatedly and spontaneously, and operation was indicated only by concomitant symptoms. This is an important observation, since a dependence upon Laurent's method might lead to unwise postponement of operative interference.

Intubation.

Urban (*Deut. Zeit. f. Chirurgie*, Bd. 3, 1 u. 2 Heft, 1890), in a careful study of thirty-two cases of intubation performed for the relief of dyspnœa dependent upon diphtheritic laryngitis, was compelled to supplement this procedure by tracheotomy in eighteen instances. Three times on account of difficulty in administering nourishment, eight times because intubation was not successful in relieving dyspnœa, four times on account of the tube suddenly becoming stopped by membrane, once because œdema of the glottis prevented introduction of the tube, and twice because both the administration of nourishment was interfered with and the dyspnœa was not relieved.

Of the thirty-two cases where intubation was practicable, three recovered —all light cases. Of the twenty-nine fatal cases, twelve died of fibrinous bronchitis, four of septic poisoning, three of acute nephritis, one of gangrenous pulmonitis, and the remainder of several of the above complications.

In twenty-one cases the condition of the urine was determined; in only seven was it found free from albumin.

In three cases the tube was coughed up; in one this happened twice, and each time was accompanied by a large tubular membrane. This child recovered. In all the cases there was more or less difficulty in swallowing and difficulty in keeping the opening of the tube free. Two absolutely refused all nourishment until the tube was withdrawn, and tracheotomy was performed.

Urban holds that rest of the inflamed larynx is an important indication not met by the intubation method, that the opening of the O'Dwyer tube is so small and its position so inaccessible that, in the first place, it is exceedingly prone to become blocked; in the second place, none but the physician can relieve the resulting obstruction, and that far from encouraging it hinders expectoration of exfoliated membranes. He grants, however, that in light cases intubation may be a valuable means of treatment, though it must be remembered that the apparently mild cases of the disease may be suddenly converted into the most malignant forms.

Operations for Stone of the Bladder.

As a result of one hundred operations for vesical calculus, Dittel (*Wien. klin. Woch.*, Nos. 5 u. 12, 1890) finds that of seventy cases of litholapaxy, four died. One of these, however, perished on account of a fatty heart, another from Bright's disease—hence attributing two deaths to the operative procedure gives a mortality of three per cent. The fatal outcome seemed to be dependent upon hypertrophy of the prostate, since the latter was wounded during the operation, and thus the door of septic infection was opened. The essayist finds the danger of wounding the bladder in litholapaxy is comparatively slight, the urethra being much more commonly injured. Recidivity,

probably dependent upon imperfect evacuation of the crushed stone, was observed five times in litholapaxy. It must be remembered that, even when the aspirator evacuates no fragments of the calculus, this is no certain sign that none are remaining in the bladder. A thorough examination with a cystoscope will alone give assurance that every portion of stone has been removed. In the majority of cases, eight to fourteen days after the operation the patient was able to leave the hospital.

Median incision was made in eight cases, once through the vagina into the bladder followed by primary suture, and once into the male urethra for impacted calculus. In the remaining cases the cut was made for the purpose of draining highly inflamed bladders.

Twenty-three cases of the high operation give five deaths, not all of which, however, were directly dependent upon the operation. In four cases primary suture was attempted, but the result was not encouraging. Open treatment and siphon drainage absolutely prevented any urinary infiltration or retention of pus. In old people suffering from paresis of the bladder, after suprapubic cystotomy permanent catheterization by way of the wound was practised with satisfactory result.

Severe Hæmaturia Treated by Nephrectomy.

Brown (*New York Medical Journal*, August 16, 1890) reports a case of hæmaturia treated by nephrectomy. The trouble occurred in the person of a woman who had given birth to a child four months before. Hæmaturia developed suddenly, and was very marked. There was pain in the right kidney, and fever reaching 105°. Suddenly at the end of five days the symptoms disappeared, though there still remained a dull pain in the right side and thigh. Five months later there was a second attack, the woman at the time being two months pregnant. After a sudden lifting motion she experienced sharp pain in the right side; twenty minutes later the urine was found charged with blood. The bleeding was so abundant that the clots prevented micturition and had to be mechanically removed. The recovery was as sudden as in the first case. The third attack occurred two months later. On examination there was tenderness on pressure between the twelfth rib and the crest of the ilium. Incision was made, but a thorough search, both by palpation and by means of exploratory needle, failed to detect any calculus. The kidney was removed, and the patient recovered entirely. Examination of the kidney showed some submucous infiltration and the ordinary microscopic appearance of a chronic pyelitis of mild grade.

Notes on One Hundred Cases of Osteotomy.

Hagyard (*Lancet*, June 14, 1890) reports the results of one hundred cases of osteotomy performed for the relief of a great variety of surgical complaints, and mostly at the homes of the patients under unfavorable hygienic surroundings. There was not a single case of septic infection, nor was any death recorded. Bony union was obtained in every case without difficulty. Two accidents happened—namely, the breaking off of a chisel on two different occasions—in the case of a man, aged twenty-eight, after cutting through the femur, one-eighth of an inch of a chisel was left behind. This was never

found. Troublesome abscess subsequently developed, but the case ultimately healed. In the second case of this kind, the fragment was never found, but gave rise to absolutely no trouble.

The dressings consisted of a pad of salicylic silk, the wound first being closed with chromicized gut and dusted with iodoform.

In one instance six compound fractures were made, the deformity being unusually pronounced. The operator commenced this case by fracturing both thighs, removing small wedges, and, at the same time, doing simple osteotomy at the upper third of the tibiæ. Two months later the tibiæ were again divided, and wedge-shaped pieces removed from the junction of the middle and lower thirds. The result was perfectly satisfactory. The after-treatment consisted in the application of light steel support on the outer side of the limb.

Many cases were also treated by splints, bandages, and surgical appliances. Among the milder means, the author warmly commends attempts at forcible straightening under chloroform. The anæsthetic is administered once a week in these cases, and after efforts at reducing the deformity, well-padded splints are carefully applied.

Healing of a Cold Abscess by Iodoform Injection.

Very rapid healing of a large tubercular abscess, due to caries of the ribs, under treatment by iodoform injections, is reported by Kerschner (*Prag. med. Woch.*, No. 28, 1890). For a year the patient had complained of pain in the right pectoral muscle, and after six months swelling was noticed, which gradually increased until it involved the greater portion of the right side of the chest.

From the history of the case, it was evident that this abscess was due to caries of the three upper ribs and the sternum, and to tubercular ulceration of the sterno-costal joints. The patient refused to consent to radical operation, therefore incision was made into the abscess, a pint and a half of pus was evacuated, and the cavity was treated by injecting an ounce and a half of a solution made of iodoform, 10 parts, glycerin, 50 parts, and water, 100 parts. This injection was repeated twice. In two weeks the abscess was entirely healed. The treatment was conducted throughout under the most rigid antiseptic precautions.

Lately it has been much more common to use olive oil as a solvent, or, at least, as a suspending menstruum for iodoform. In this relation, it is interesting to note that Klingemann (*Centralblatt f. Chir.*, August 9, 1890) reports a series of observations to determine the solubility of iodoform in olive oil. He finds that at the most the oil will not dissolve more than 3 per cent. of iodoform. From this, it follows that the 10 per cent. and 20 per cent. solutions, so frequently advised and used, contain the greater portion of the drug in suspension.

The Present Position of Antiseptic Surgery.

The address delivered before the International Medical Congress at Berlin upon this subject (*British Medical Journal*, August 16, 1890), coming as it does from Lister, the father of modern surgery, is of world-wide interest.

The theory of phagocytosis is carefully discussed. The essayist accords his full support to the well-known views of Metchnikoff upon this subject. It is by means of this theory that he explains the successful results following abdominal operations at the hands of those who disclaim antiseptic methods. He advises the use of weak solutions of bichloride of mercury, 1 : 10,000, for washing out the abdominal cavity. He states that his practice for some time past has been, in ordinary surgical operations, to wash the wound, after securing the bleeding points, with a strong solution of corrosive sublimate, 1 : 500, and to irrigate with a weaker lotion (1 : 4000) during the stitching. When the operation involves a joint, however, the synovia of which is healthy, 1 : 500 sublimate lotion produces so much irritation that its use is not desirable. In these cases a solution of 1 : 4000 is as strong as can be safely employed. In so far as the spray is concerned, Lister states that he feels ashamed that he should ever have recommended it for the purpose of destroying microbes of the air. The advisability of dispensing entirely with irrigation, and consequently with drainage, since the free flow of serum necessitating the use of tubes is mainly due to the irritant effect of the antiseptic lotions, is discussed by the author; and, though he has not yet adopted this practice in his own surgical work, yet from the general tenor of his remarks, he clearly favors it.

In conclusion, Lister expresses entire confidence in his recently-described cyanide of mercury dressing.

Surgery of the Lateral Ventricles of the Brain.

Three cases of operation for the relief of effusion into the lateral ventricles, performed by the reporter, together with two cases communicated by Mayo Robson, are reported by Keen (*Medical Press and Circular*, August 20, 1890).

The first case, a boy aged four, was threatened with blindness from acute hydrocephalus. For the relief of central pressure, an operation was performed and puncture was made at a point one inch and a quarter behind the left meatus, and the same distance above "Reid's base-line." A half-inch button of bone was removed, and the brain punctured by a hollow needle inserted in the direction of a point two and a half inches vertically above the opposite meatus. At about an inch and three-quarters the resistance suddenly ceased, and the cerebro-spinal fluid began to flow. The ventricle was drained by horsehair.

In two days the swelling of the optic nerve, which had been noted before the operation, was markedly diminished. This improvement continued until the seventh day, when the swelling increased.

The symptoms strongly indicated the presence of a tumor; this was sought for by probing, through the opening made for drainage, into the occipital lobe. This failing, a small opening in the occipital bone below and to the left of the inion was made. The cerebellum was thoroughly explored by means of a probe carried to the depth of over two inches, but no tumor could be detected. At the end of the second week horsehair drainage was substituted by a rubber tube. At the end of four weeks, the symptoms having increased in severity, the right side of the skull was trephined, and the occipital lobe

was punctured to the tentorium, but no tumor was found. The right ventricle was then drained.

Twice during the subsequent course of the case the ventricles were irrigated, the liquid passing from one side to the other. On the forty-fifth day after the first operation the child died.

A sarcoma was found in the left lobe of the cerebellum, compressing the straight sinus and the veins of Galen, and encroaching on the fourth ventricle. No trace of the many punctures made into the brain-substance could be found. One of these had gone directly through the tumor.

The next case, aged three and a half years, suffered from hydrocephalus, which appeared a few months after birth. The left ventricle was tapped, as in the first case, and some turbid cerebro-spinal fluid was withdrawn. On the fourth day after this operation, the ventricle of the opposite side was opened, and rubber tubes were inserted from each external opening into the corresponding ventricle.

On the next day convulsions set in. The drained cerebro-spinal fluid was replaced by boiled water thrown in from a height of about eight inches. The spasm ceased as soon as the warm fluid flowed into the ventricles. On stopping the flow there was recurrence of convulsions. Eight times these convulsive seizures were arrested by injection of from half an ounce to an ounce of fluid. The child died on the fifth day from the first operation.

The third case was one of tubercular meningitis, with unilateral acute internal hydrocephalus involving the left ventricle. The foramen of Monro was closed. The left ventricle was tapped through the arm-centre. The child died four hours after the operation.

The first case communicated by Mayo Robson was a child aged ten, who suffered first from a discharge from the ear. This had lasted a month when she was admitted to the hospital; there had also been rigidity of the neck and twitching of the right angle of the mouth. On admission to the hospital her temperature was 105°, there was pain on the left side of the head, paresis of the right arm and leg, gradually developing into complete hemiplegia and aphasia. The optic disks were inflamed. The child was trephined not quite three weeks after admission. An opening of the skull was made over the arm centre; the brain on exposure did not pulsate. An exploratory needle was passed in various directions in a search of pus, and was finally pushed into the lateral ventricle, when half an ounce of clear fluid was drawn off, after which pulsation returned to the brain. The wound was closed without drainage, and the following day there was slight power in the arm, on the third day simple questions could be answered. Six months later the child was perfectly well.

The second case was one of increasing hydrocephalus, following the treatment of spinal bifida by Morton's injection. An exploratory needle was inserted into the ventricle, and by means of a pair of sinus-forceps a rubber drain was thrust into this cavity. The amount of discharge was very large. On the third day the child died in convulsions.

A case of removal of clot from the lateral ventricle, by Dennis, is also reported. This resulted fatally, but rather from the injury inflicted upon the brain by the original traumatism, than from any cause connected with the operation of incising the ventricle.

Four cases of abscess rupturing into the ventricle are also given, together with two cases of rupture of the ventricle by compound fracture; both of these last recovered.

Five cases of rupture of the lateral ventricles from simple fracture of the skull, are also noted. This accident occurred in every instance in the person of young children, all of whom showed secondary soft swelling under the scalp. Of these cases three recovered.

After a general review of the subject, Keen draws the following conclusions:

I. Injuries involving the ventricles, the result of compound fracture, or of trephining, and involving greater disturbance of the cerebral substance, are not necessarily fatal, for ten of the twenty-six cases here reported have recovered. In these few cases compound fractures and extensive injuries, unless primarily fatal, seem to be less dangerous than rupture of the ventricle from simple fracture. They should be treated antiseptically, in precisely the same manner as wounds in other parts of the body, by the establishment of asepsis, drainage, and the usual later treatment. If pus follows, or the cerebro-spinal fluid becomes dammed up, causing symptoms of pressure, incision and free drainage should be resorted to.

II. In cases of simple fracture involving the ventricles, experience would seem to indicate that it would be wise not to attempt any operative procedure unless threatening symptoms supervene. If necessary, I should recommend that the cyst containing cerebro-spinal fluid should be continuously and slowly drained by a small bundle of horse-hairs, rather than by free evacuation. But, I believe, in the majority of cases, constant pressure, and but little active treatment, would meet such symptoms as might arise. Possibly slight pressure would be all the treatment that would be necessary.

III. Abscess of the brain bursting into the lateral ventricle has been thus far uniformly fatal, and demands the promptest treatment possible. The suggestion made for instant bilateral trephining and irrigation of the ventricles, can at least do no harm, although the possibility of its doing any good is but slight in so fatal a condition.

IV. Hydrocephalus, whether acute or chronic, is usually a fatal disease.

V. Surgical procedures for tapping the ventricles for its relief are easy, and certainly do not *per se* involve great danger.

VI. Whether they will cure the disease is as yet not determined. In acute effusions tapping, with or without drainage, as may be thought best, will certainly save some lives otherwise doomed to be lost; and in the chronic form long-continued slow drainage at an early date, is at least worthy of a trial, with a reasonable hope of success in a few cases.

VII. The methods which I have described for performing the operation, especially by the lateral route, are at least worthy of a trial, with a view of determining the value of such surgical procedures.

VIII. After trephining and tapping of the ventricles, irrigation of the ventricular cavities from side to side, is not only possible but does no harm. In abscess involving the ventricle, and perhaps in other conditions, it may possibly do good. The fluid used for such irrigation should not contain anything which, if retained and absorbed, might do harm. An artificial cerebro-

spinal fluid, or a simple boracic acid solution, would seem to be the best for such use.

IX. Convulsions due to rapid withdrawal of the cerebro-spinal fluid may be checked by the re-injection of an artificial cerebro-spinal fluid, or such other innocuous fluid as the circumstances may make available.

X. In either irrigation or injection of the ventricles, it is probably desirable that the air should not enter; but such entrance of air does not seem to be productive of mischief.

XI. In hemorrhage in the lateral ventricles, at least of a traumatic origin, instant trephining and evacuation of the clot should be done, and in a few cases will probably be followed by a cure, unless the injury of the cerebral tissue is such as to be incompatible with life.

Rupture of the Spleen.

Darwin (*Indian Medical Gazette*, June, 1890) reports a case of rupture of spleen occurring in the person of a healthy young man, aged twenty-one, and caused by a fall of moderate severity.

The patient walked one hundred and fifty yards after the injury, then sat down, complaining of strange sensations, vomited, felt exhausted, and looked pale. He quickly became collapsed, had involuntary fæcal evacuations, and died in a few minutes.

On performing an autopsy the spleen, which was twice its normal size, was found ruptured; the abdominal cavity was full of blood.

The Treatment of Cancerous Strictures of the Œsophagus by Continuous Catheterization.

Gangolphe (*Lyon Méd.*, No. 27, 1890) strongly urges the employment of continuous catheterization in the treatment of cancerous strictures of the œsophagus. Since a definite cure of the disease is practically impossible, the chief indication would be to furnish alimentation without undue disturbance of the seat of malignant ulceration. This end may be attained either by the performance of a gastrotomy and the formation of a gastric fistula, or by the passage of a catheter, which is subsequently maintained in position, and by means of which nourishment may be poured into the stomach. Against gastrotomy, however, stands a very high mortality. According to Lefort, this is 72.8 per cent., whilst Zessas places it at 86 per cent. Even when the patient recovers from the operation he rarely survives upward of a few months.

The reasons for the want of success in gastrotomy are sufficiently evident. There is always a tendency to postpone the operation, since it is a very difficult matter to decide just when narrowing is sufficient to justify such a serious therapeutic measure. Hence, when the surgeon finally decides to make the opening into the stomach, the patient is practically moribund.

Gangolphe proposes to lessen the responsibility of the surgeon by the early employment of permanent catheterization. Nearly always, patients are seen when the disease is not yet far enough advanced to prevent the passage of instruments; but when this procedure is adopted for the purpose of making a

diagnosis, or for the introduction of alimentation, it causes so much pain and so greatly aggravates the local condition that it is not frequently repeated. The narrowing becomes steadily less until the œsophagus is entirely impermeable.

Boyer, in 1799, treated a woman, aged forty-six, suffering from cancerous stricture of the upper portion of the œsophagus, by passing one end of a rubber tube through the stricture, bringing its other end out by the nostril, and keeping it permanently in this position. The patient lived five months, taking all her nourishment through this tube. Krishaber maintained life for nearly a year by the same means. Croft, Gersuny, Kirmisson, together with others, publish similar cases most favorable in their results.

Authorities vary in regard to the advisability of using short or long tubes. The short tubes are made of soft rubber; they are rarely over four to six inches in length, depending upon the seat of stricture. The upper end is somewhat funnel-shaped, and has attached to it two silk threads, which are carried out of the mouth. The tubes are introduced by means of an instrument especially designed for this purpose.

The long sounds, made of red rubber, and reaching into the stomach, are most popular in France. The short sounds, the upper extremities of which remain in the pharynx, allow the patients to taste and swallow their food, but since much of the liquid nourishment is liable to pass along by the side of the sound the latter may, by remaining in the upper portion of the œsophagus, result in fermentation and subsequent irritation. The presence of the long sounds in the pharynx and nasal cavity sometimes gives rise to considerable irritation, but this gradually subsides with time. Occasionally a fever, in every way comparable to the so-called urethral fever, is developed. These are practically the only disadvantages attending this treatment. It is not necessary that one sound should be worn constantly. In fact it is very desirable that the instrument should be changed occasionally, and at times the surgeon has been able to withdraw the tube and allow the patient to swallow without any instrument, again replacing the catheter when symptoms of dysphagia appear.

As to the results furnished by this method, the patients have usually survived from one to eleven months. At first there has always been rapid improvement, followed, of course, by a deterioration as the cancerous cachexia becomes developed. The profound melancholia, and other characteristic features of malignant disease frequently disappear. The weight increases from ten to twenty-four pounds, and the patient becomes physically and morally a new man.

The author advances the following conclusions in regard to the applicability of catheterization.

The permanent catheter is especially indicated in recent cases of cancerous stricture of the œsophagus. Even when the respiratory system is invaded the long, soft catheter can still be employed with advantage, since it absolutely prevents the penetration of food into the bronchi. The existence of abundant hæmorrhage, either spontaneous or excited, is a contra-indication to frequent catheterization, and sometimes even to the employment of a permanent catheter, although the latter may be used for a considerable time without serious accident.

Short canulas may be used in the early stages of the disease, while the long canulas seem more applicable to the latter periods.

Gastrotomy should be reserved for exceptional cases in which involvement of neighboring organs, easily excited and frequently repeated hæmorrhages, or impossibility of catheterization after repeated efforts contra-indicate the use of a permanent catheter.

The Operative Treatment of Dislocations Irreducible by Ordinary Means.

Several cases of dislocation which could be reduced only by operation, are reported by Mayo Robson (*The Lancet*, July 26, 1890).

In all these cases the ordinary means of reduction were tried in vain. The joints were then exposed by a free incision, and the normal relation of the bones restored.

In the first case there was an irreducible backward luxation of the elbow, seen four weeks after the injury. The triceps tendon was divided and the joint was opened. It was found that the coronoid process was broken in two parts, one being attached to the tendon of the brachialis anticus, the other to the stump of the coronoid process. The external lateral ligament was torn and displaced, lying between the head of the radius and the capitellum, thus preventing reduction. The dislocation was readily reduced, the triceps tendon was stitched with catgut suture, and the wound was closed and drained; healing was by first intention. Two months later there was a useful movable joint.

The next case was one of irreducible dislocation of the same joint of five months' standing. This was operated on as before, but on account of exuberant callus the head of the radius had to be resected. The function of the joint was perfectly preserved. A supra-coronoid dislocation of the shoulder, six weeks old, a dorsal dislocation of the hip ten weeks old, and a dislocation of the finger three weeks old, were also subjected to operation after failure of the ordinary means for obtaining reduction. Subsequent results were all that could be desired.

In contrast to these cases are reported a number where operation was refused. In all a permanent and very great disability resulted.

OTOLOGY.

UNDER THE CHARGE OF

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Nasal and Aural Symptoms in Grippe.

Dr. H. Nimier, under the above title, presents his observations of these processes in the recent epidemic of influenza (*Le Mercredi Médical*, 1890).

In this paper some interesting historical facts pertaining to previous epidemics are given. In 1580, Boeckel noted the occurrence of purulent otitis media in an epidemic of grippe, and in the epidemic of 1729–30, Fuster noted otalgia and sanguinolent otorrhœas following this disease; and again, in an epidemic of 1732–33, he notes the occurrence of acute otitis with purulent discharge, after influenza. In 1835 Ozanam wrote that "sometimes complications arise (in grippe) which render the disease grave and longer in duration, because to the early symptoms, in some cases, are added intense earache and swelling in the parotids and the glands of the neck. At last the disease terminates with a discharge of pus from the ear, and sometimes, though rarely, with suppuration of the parotids." This latter symptom does not seem to have been noticed in the recent epidemic. Nimier then gives some comparative statistics of acute otitis media, as collected in the Val-de-Grâce Hospital, in the service of Professor Chauvel. Thus, in December, 1888, and January, 1889, of eighteen cases of otitis media admitted to the clinic, *six* were acute; while in the same period of 1889 and 1890, of thirty-two cases admitted, *fifteen* were acute.

The Ear, Fauces, and Larynx in Tabes Dorsalis.

Dr. Alessandro Marina, of Trieste, contributes an article on the above subject to the *Archiv für Psychiatrie u. Nervenkrankheiten*, Bd. xxi. Heft 1, which is reviewed in the *Archiv f. Ohrenheilkunde*, by Szenes, Bd. xxix., 1890. It appears that the author examined the ear in forty tabetic patients, and found twenty-nine cases of disease of the inner ear. In no instance were Ménière symptoms found, and in most instances subjective noises were not present. In seven tabetic women the internal ear was said to have been diseased in three, the middle ear in one, and in two a mixed form of aural disease was found. The author believes that not only the terminal apparatus is affected, but also the acoustic nerve itself, especially when the functional disturbance is great. The auditory changes are the consequences of a more or less pronounced anatomical change, for in most cases anatomical lesions in the central and peripheral organs were demonstrable. In eleven cases electric excitation of the acusticus was essayed, and reactions obtained, excepting in two cases, with a current of from two to eighteen milliampères. In eight instances the patients evinced a more or less marked hyper-excitability of the acoustic nerve, under the electric stimulus.

Chronic Suppuration of the Ear; Carcinoma of the External Auditory Canal; Facial Paralysis; Meningitis.

Ludewig narrates such a case in the annual report of the aural clinic in Halle (*Archiv für Ohrenheilkunde*, vol. xxix., 1890). The patient was a man, sixty-one years old. When first examined in the clinic his left auditory canal was swollen, red, and rough. A yellowish, offensive pus trickled from the fundus of the ear. This ear was very deaf, and painful, the pain radiating over the left side of the head. The appearance of the ear suggested malignant disease. A small piece from the lower wall of the auditory canal was examined under the microscope, and proved to be carcinomatous. While on a second visit to the clinic, ten days later, he was seized with a chill, followed

by a rise in temperature, facial paralysis, and somnolence, which latter persisted until death. There was one more chill and repeated vomiting, death occurring two days later. The post-mortem examination revealed carcinoma of the left external auditory canal; retention of pus in the middle ear; purulent meningitis. Ludewig expresses the very just opinion that a timely operation in this case might have warded off the meningitis, which was due to retention of pus by the swollen and choked auditory canal, and might also have cured the original purulent disease. The carcinoma remained limited to the cartilaginous part of the auditory canal. It would have been well to endeavor to remove the cartilaginous canal and the lining of the osseous portion of the same. This would have prevented retention of pus, and warded off the attack of meningitis.

Normal and Pathological Anatomy of the Middle Ear.

Prof. Politzer, of Vienna, in a lecture delivered at the International Congress of Otologists, in Paris, alluded to the pathological changes which may occur in what he terms the "external attic,"[1] a space bounded outwardly by the flaccid membrane and the outer osseous wall of the drum-cavity, and inwardly by the malleus, neck and head, and the anvil, above by the superior ligament of the malleus, and below by the short process of the malleus. Various inflammatory processes may arise in this space, viz.: chronic catarrhal processes with new formations of connective tissue are likely to occur, also purulent inflammations, both acute and chronic, this latter being both stubborn and dangerous. There may then be found in this cavity thick exudations or cholesteatomatous masses, and sometimes granulations and polypi, which project from the perforation in Shrapnell's membrane. Not infrequently caries occurs in the hammer-head and in the margo tympanicus.

The treatment recommended consists in injections of antiseptic solutions into the diseased region by means of delicate canulas attached to a syringe. The author had employed 1–3 per cent. solutions of resorcin, and 1:2000 bichloride solutions in this way, which he follows with instillations of a five-per-cent. alcoholic solution of boric acid or of iodol, and in some rare cases a ten-per-cent. solution of nitrate of silver. If the discharge still continues after this treatment, it must be due either to the narrowness of the perforation in Shrapnell's membrane or to the choking of the attic space by synechiæ, or to caries of the head of the malleus and of the margo tympanicus. In such a case the perforation should be widened, and the space cleared of its cholesteatomatous contents. If caries of the malleus-head or margo tympanicus is diagnosed by means of a sound, the diseased portions of bone should be removed. The entire bone is to be removed, according to Politzer, only when the degree of deafness is great. [As chronic suppuration of this space is invariably indicative of caries in the ossicles, there is no cure for it but excision of the membrana tympani and the malleus, and the incus, too, if found diseased—according to our experience.—R.]

[1] The third tympanic pouch of Prussak and of Brunner.

Permanently Good Results of Excision of the Membrana Tympani and Malleus in a Case of Chronic Aural Vertigo; also, in a Case of Chronic Suppuration of the Tympanic Attic.

Dr. Charles H. Burnett presented a paper with the above title at the meeting of the American Otological Society, 1890. In it an account is given of a case of aural vertigo (often called Ménière's disease) caused by chronic catarrhal adhesion of the membrana and malleus to the inner wall of the drum-cavity. All forms of rational treatment laid down for such cases failed to relieve the distressing tinnitus and vertigo. As the retraction of the chain of ossicles, induced by the adhesion of the membrana and malleus, was deemed the cause of the tinnitus and vertigo, excision of the adherent parts of the conducting apparatus was performed under ether, with immediate relief, and there has been no return of the annoying symptoms in the two years and four months which have elapsed since the operation.

So far as Dr. Burnett can discover, this is the first case of chronic aural vertigo (Ménière symptoms) reported as cured by an operation such as described. The case, furthermore, proves the mechanical origin, and not a neuropathic one, of some cases of so-called Ménière's disease.

In the case of chronic suppuration of the attic, of six years' duration when first seen by Dr. Burnett, in July, 1888, all forms of treatment by antiseptic injections, etc., into the attic cavity (recessus epitympanicus) failed to cure the purulency, though persevered in for a year. Therefore it was resolved to excise the membrana tympani and malleus, with a view to removal of the diseased malleus head, and also to gain better drainage and a more direct way of medication of the attic. The hearing was *nil* in the affected ear.

Therefore under ether, in July, 1889, the membrana and malleus were excised. The malleus head was found eroded by necrosis on its anterior free surface. Pathological bands were found between the attic and the atrium, forming the floor of a sinus, conducting the pus from the diseased spot to the perforation in the membrana flaccida, and not into the external auditory canal. The purulency stopped in the course of a fortnight, a new membrane began to grow, and finally, in the course of three months, a new membrane had formed. The hearing finally reached *fifteen feet for whispered words.*

Traumatic Partial Elimination of the Drum-head; Closure of the Defect in Eight Weeks.

Dr. A. Eitelberg, of Vienna, reports a case of the above nature (*Archives of Otology*, vol. xix., 1890). A man, twenty-eight years old, while carrying a heavy basket into a cellar, let the load slip from his hands and fall against his left temple, pressing the right side of his head against the cellar wall. Immediately blood flowed profusely from his nose and left ear. The next day it was found that the aural hæmorrhage had lasted all night, and still was continuing when the man's ear was examined. The membrana tympani was found extensively ruptured and suffused with blood. The ear was cleared out by syringing. Politzer inflation was performed, and the canal lightly tamponed with iodoform-gauze. The hæmorrhage continued for five days with diminishing quantity. The semi-detached piece of the membrana

became bluish-gray in color and rolled up. On the sixth day this shred became detached, and was syringed out from the ear. It measured 6 mm. by 4 mm. The head of the stapes now became visible, but the handle of the malleus seemed drawn out of sight by the unopposed force of the tensor tympani muscle. In eight weeks a new membrana tympani had formed. The hearing was good, a whisper being heard 110 cm.

Pathological Changes in the Membrana Tympani and in the Drum-cavity in Fatal Middle-ear Suppurations.

Wilhelm Kirchner, of Würzburg, in a paper on this subject, read in March last at a meeting of the Physik.-med. Gesellschaft of Würzburg, demonstrated the remarkable changes which may ensue in chronic suppuration of the middle ear. In one case, in particular, death was caused by thrombus in the transverse sinus, the latter being converted, as it were, into a solid cord by the complete organization of the thrombus. The membrana tympani was unusually thick, not perforated, but the drum-cavity was filled with pus, the mucous membrane of the latter cavity, as well as that of the mastoid cells, thick and infiltrated. The microscope showed that all the layers of the membrana tympani were thickened, and the vessels and lymph-spaces unusually widened. Furthermore, on the inner surface of the membrana tympani were papilliform and villous growths, with epithelial covering composed of numerous small cells and a few connective-tissue fibres, most numerous in the region of the pouches of the membrana. (Szenes, *Archiv f. Ohrenheilkunde*, Bd. xxix., 1890.)

Cases of Meningitis from Inflammation of the Tympanum.

Dr. J. Orne Green reports four cases of fatal meningitis from chronic suppurative inflammation in the drum-cavity. (*Boston Medical and Surgical Journal*, June 19, 1890.) In all of these cases an operation (perforation) was performed on the mastoid region for the evacuation of pus supposed to be pent-up in the mastoid cavity.

Dr. Green says, "All four of the cases are demonstrations of the failure of the operation to avert the fatal result where the meninges have been already infected, however successful the operation may be in cleansing the original source of infection; and this brings up the surgeon's duty in such cases." Two forms of meningitis from inflammation of the ear are found. One is infection by absorption into the circulation, the exact part by which the morbid material is carried from the ear to the meninges not being known; the other is an extension of inflammation *ex contiguo*, from the bone to the dura mater, and thence to the other meninges. The former is a rapid process, and once established is necessarily fatal; the latter is a gradual process, "in its incipiency localized," and, as Dr. Green believes, is occasionally cured.

Conditions of the Auditory Apparatus in Tabes.

Dr. Eugene Morpurgo, of Trieste, has published a paper upon the above-named subject based on the examination of the literature pertaining to it, and also upon the observation of fifty-three cases of tabes. (*Archiv für Ohren-*

heilkunde, vol. xxx., 1890, Parts 1 and 2.) There were forty-two men and eleven women in this series. Ten had normal hearing, and forty-three were deaf. There were, in all, one hundred and six ears examined, of which eighty-five were abnormal in hearing, and twenty-one normal—*i.e.*, 81.13 per cent. were diseased and 18.87 per cent. were normal. Thirty-four men were affected in their ears, and nine women.

Of the entire eighty-five diseased ears:

8	heard	. . . . .	0
39	"	whispers	0–100 cm.
18	"	"	100–200 cm.
18	"	"	200–400 cm.
2	"	"	400–500 cm.

Of the forty-three tabetic individuals who did not possess normal hearing, fifteen showed changes as detected by the ear-mirror, and twenty-eight appeared normal.

Subjective noises of a trifling form were complained of in eight cases; six times in ears with a membrana of normal appearance, and twice in those of abnormal appearance. Vertigo was present in two cases.

In most of the cases examined the facts observed seemed to show that in general a disease of the perceptive apparatus of the ear was present.

Two Cases of Cerebral Abscess Resulting from Long-standing Otorrhœa; Operation; Recovery.

These cases are reported at length by Urban Pritchard, of London; they occurred in the wards of King's College Hospital, under the care of Professors Cheyne and Rose. (*Archives of Otology*, vol. xix., 1890.) The first case was that of a man, twenty-three years old, from whose left ear there had been a chronic discharge ten years, with increasing headache.

When first seen by Mr. Rose he was drowsy and incoherent; there was abundant and offensive purulent discharge from the left ear, tenderness on pressure most marked about two inches above the meatus, and slight facial palsy. The tongue was thickly coated. No absolute optic neuritis; no paralysis of the extremities, and tactile sensation appeared perfect.

The same day Mr. Rose trephined the skull at a spot two inches above and one-half inch in front of the meatus, over the tender area. The dura mater, which appeared quite healthy, was opened, but no pus followed repeated exploratory punctures into the brain-substance with trocar and canula. The trephine was then applied an inch behind the posterior margin of the original opening, and offensive pus was found outside the dura mater, which was left intact. The operation was performed June 23, 1889. By August 20th the man was made an out-patient and left the hospital. On March 27, 1890, his condition was as follows, viz.: "The ear was quite healthy and dry, his general health good, and he did not complain of headache. Since recovering from the operation he has been subject to periodic attacks of aphasia, of about twenty minutes' duration. These attacks at first occurred about once a fort-

night, but have gradually become much less frequent. Except for a certain slowness of speech, the survival, probably, of the imperfect cerebration which was so marked a feature of his convalescence, he is, intellectually, quite clear and vigorous."

The second case was that of a man, twenty-six years old, who had suffered during the last seven or eight years from a purulent discharge from the left ear, and during this period, upon two occasions, was laid up with intense pain in the ear, and upon the last occasion, six months previous to his admission to the hospital, the pain in the ear was attended by swelling in the neck.

On September 7, 1889, he was suddenly seized with intense pain in the ear and left side of the head, and on the next day appears to have had two distinct rigors. On the next day there is a "confused history" of a "fit," but one without twitchings or convulsions.

On the 11th of September he was admitted to King's College Hospital, under Mr. Cheyne. During the first few days of his residence in the hospital there was a complete absence of the cerebral symptoms which characterized the first case. He complained of intense pain in the head, "the focus of which appeared to be over an area of about half an inch in diameter, situated in the left temporal fossa, just above the middle of the zygoma. He was disinclined to get out of bed, and when he did so, was giddy and hardly able to stand. The discharge from the ear was profuse, purulent, and offensive, the left membrana tympani was destroyed, and there were numerous polypoid growths springing from the middle ear. *There was no optic neuritis*, nor paralysis of any kind. On September 14th the temperature rose to 101°, it having been normal before. In the evening there was considerable delirium, and during the night he vomited for the first time. The next day twitching of the left eyebrow and angle of the mouth was noticed, when he became more delirious. Two days later he became very noisy and delirious, the twitching was more marked, there was retention of urine; and he lay in an unconscious, torpid condition. The skull was now trephined at a spot one and a quarter inches behind the meatus, and the same distance above the cerebral base-line. Both bone and dura mater appeared to be quite healthy, but on exploration inward and forward about half an ounce of very fetid pus escaped. The broken-down brain-substance was removed, the whole thoroughly irrigated, a drainage-tube inserted, and the wound closed. There was only a transient relief, the patient becoming delirious again. He had also one or two rigors, and became very low."

On September 24th, a week after the trephining, the mastoid cells were opened, but contained no pus. On October 2d the track of the drainage-tube was freely dilated by means of long, thin, sinus-forceps, which led to the escape of about two drachms of pus. From this time the patient began to improve. The next day his temperature became normal, and remained so. Word-deafness was noticed in this case, as in the previous one, but it was not so prominent nor persistent.

The latter case, so far as the ear is concerned, has not been so successful as the previous case, probably because there is bare bone in the drum-cavity.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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Primary Sarcoma of the Tonsil.

An instance is reported by Dr. Holger Mygind, of Copenhagen (*Journ. of Lar. and Rhin.*, August, 1890), in which treatment by electrolysis at the periphery failed to arrest the progress of the disease, which terminated fatally.

Nasopharyngeal Tumors.

M. Higguet has reported (*Journ. de Méd. de Chir. et de Pharm.*, 5 Juin, 1890) a curious case of spontaneous detachment and expectoration of a fibromyxoma, the size of a large nut, from a boy fourteen years of age, from whom the day previous a mucous polyp had been removed anteriorly with the cold snare. Its pedicle had had the same point of attachment as the tumor removed from the nose.

M. Capart (*Idem*) had succeeded in considerably reducing by electrolysis a fibroid polyp in a boy fifteen years of age. It was attached to the base of the cranium, behind the right nasal fossa. An attempt to remove it in mass had produced such extensive hemorrhage as to preclude continuance of the manipulation. Eight sittings had been had, of twenty minutes each, with a current of fifteen to twenty milliampères, at first with both needles in the tumor, but more recently with but one.

Mucous Polyp of the Antrum.

M. Rutten reports (*Journ. de Méd. de Chir. et de Pharm.*, 5 Juin, 1890) a case of empyema of the antrum, in a man fifty-four years of age, in which the nasal suppuration underwent augmentation after extraction of the second molar tooth. Soon afterward a polyp was seen descending several millimetres below the alveolus. It was removed with the cold snare, and the parts were cauterized with chromic acid. The alveolus cicatrized completely, and the cure was complete.

Tuberculous Nasal Growths.

M. Higguet has reported (*Journ. de Méd. de Chir. et de Pharm.*, 5 Juin, 1890) two instances in females of bilateral tumors of the septum cured by curetting. M. Capart mentioned that he had operated upon eight cases, and stated that in the absence of microscopic examination they were readily confounded with sarcoma.

Nasal Reflexes.

De. O. Laurent has reported (*Journ. de Méd. de Chir. et de Pharm.*, 5 Juin, 1890) an instance of highly increased oppression following cauterization of hypertrophic middle turbinate bodies, and which was insusceptible of relief as the cicatrices could not be excised. It was believed that the cicatrices had enveloped certain extremities of filaments of the fifth pair of nerves, and, in retracting, provoked irritation and inflammation. He recalled that Rethi had related five cases in which similar cauterizations had provoked sternutation, vertigo, supraorbital neuralgia, and laryngospasm; three of which were relieved by subsequent ablation of the cicatrices, while the other two remained unrelieved.

On the Relations of the Larynx to the Motor Nervous System.

Dr. Felix Semon and Mr. Victor Horsley, of London, present (*The Medical Press and Circular*, August 13, 1890) a general revision of the result of their observations, clinical and experimental, which began with Semon's recognition that the abductor muscles of the vocal bands always suffered primarily, or even exclusively, in progressive organic lesions of the motor laryngeal nerves, from the bulb downward to the periphery, while the antagonistic group of adductors almost always suffered alone in functional disorders. Since Semon's first publication in 1881, he has from time to time recorded subsequent confirmative observations. Some months before the appearance of Semon's first article, Rosenbach had expressed a similar opinion in regard to a special vulnerability of the abductor laryngeal muscles, as contrasted with their antagonists.

Semon and Horsley believe that the bulb contains a centre for respiratory movements of the larynx independently of those of the thorax, and for two reasons:

1. Because of the existence of a reflex abductor tonus which keeps the glottis wide open while the thorax is continuing its rhythmic movements; and

2. Because direct experimental observation in the cat shows that excitation of the upper portion of the floor of the fourth ventricle evokes persistent abduction of the vocal bands, even while the thorax continues its rhythmic expansion and contraction.

They also recognize a phonal centre in the bulb, excitation of which produced immediate closure of the glottis. Excitation of the ala cinerea, and of the upper border of the calamus scriptorius invariably produces bilateral movements of closure. Excitation of the restiform body, and of its inner border in a vertical line, produces adduction of the vocal band of the same side. They have been unable to decide whether this unilateral effect is attributable to excitation of a small centre, or of the efferent fibres running to the vagal roots.

The specific action of systemic anæsthetization, notably etherization, produces considerable variation in the results; large quantities of ether limiting the movements to abductions, and moderate narcotization permitting the differential representations described. The different effects on the peripheral

muscles are presumptively ascribed to differences in their biological constitution, including the nerve-endings.

Special laryngeal representation has been found in the cortex; there being certain differences between animals of different species and between young and adult specimens of the same species. Of all the species used, the cat presented the greatest development of respiratory representation, and the monkey the least; an actual centre for genuine abduction having been found in the cat only, and existing just above the olfactory or rhinal sulcus. Phonatory representation was found to exist bilaterally; adduction being intensest in the anterior half of the foot of the ascending frontal convolution, and diminishing toward the peripheral portion of the area; excitation of the extreme margin resulting only in producing the cadaveric position of the vocal bands. Bilateral movements follow unilateral excitation, even when the opposite area has been extirpated, and even after division of both crura cerebri, after ablation of both hemispheres, and, indeed, after removal of the cerebellum as well.

The Phonatory Action of the Posterior Crico-arytenoid Muscle.

Dr. Paul Raugé (sur la Physiologie normale et pathologique des Muscles du Larynx, *Lyon Médical*, Août 3, 10, 1890) contends for the physiological duty of the posterior crico-arytenoid muscle as primarily a fixator of the arytenoid cartilage for purposes of phonation, and as only secondarily a dilator of the glottis in fixed inspiration. He follows the lead of Jelenffy, of Buda-Pesth, in contradistinction to the vast majority of anatomists, physiologists, and laryngologists, who adhere to the old opinion that this muscle is the respiratory or dilator muscle of the larynx. Raugé's views are based upon anatomical grounds, including the architectural structure of the arytenoid cartilage, and the methods of attachment of its muscular investiture. He is therefore inclined to regard the majority of instances reported to be paralysis of the abductors as in reality examples of contracture of the constricting muscles.

OBSTETRICS.

UNDER THE CHARGE OF

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The Operative Treatment of Pregnancy Complicated by Cancer of the Uterus.

Sutugin (*Zeitschrift für Geburtshülfe*, Band xix. Heft 1) reports two cases of pregnancy complicated by carcinoma of the cervix treated by amputation

of the uterus. In both cases the life of the child was saved. In one case the mother perished from exhaustion forty-two days after the operation; in the other the patient died eight days after operation from peritonitis caused by infection from the cancer. The operation was performed in both instances when labor was well advanced. The stump of the uterus was secured by an elastic ligature at the lower angle of the abdominal wound, and was dusted with plaster-of-Paris and iodoform.

If cancer is advanced, it is agreed that the Cæsarean operation should be performed. If cancer is discovered early in pregnancy, the extirpation of the uterus is indicated. In such cases as those reported by Sutugin, where cancer is limited to the cervix only, uterine amputation will save the life of the child, and does not complicate the existence of the mother.

Chorea during Pregnancy.

Pantzer (*Centralblatt für Gynäkologie*, No. 32, 1890) reports the case of a woman, aged twenty-six, pregnant for the fifth time, and suffering from severe chorea. Her movements had been so excessive that labor was induced, after which choreic movements persisted for several weeks. During the present pregnancy chorea became so pronounced as to oblige her to enter a hospital. She was easily controlled by morphine, although the movements could be readily excited. The examination of the patient disclosed no evidence of disease threatening the interests of her child or herself at confinement. The treatment employed was that usually given, with the added precaution to avoid large doses of bromides, which tend to favor hæmorrhage after labor. The patient recovered well from a normal labor.

Cardiac Disease Complicating Pregnancy in Labor.

Mackness (*Edinburgh Medical Journal*, 1890, p. 123) reports a case of pregnancy complicated by aortic and mitral disease, in which labor was induced at term, as birth did not occur at the usual period. Difficulty was experienced in bringing on labor-pains; the action of the heart being extremely weak, the patient was given five minims of tincture of strophanthus every four hours, with a half-ounce of brandy and beef-tea at frequent intervals. It was necessary to complete labor by the forceps. Considerable hæmorrhage followed, which was allowed to go on for some time, and which seemed to relieve the patient. The child was large and well developed. The administration of strophanthus was continued, and after a tedious convalescence, the patient recovered sufficiently to do light domestic service.

The case is interesting from the excessive cardiac disease which was present, from the fact that the patient became excessively weak, and suffered from persistent emesis, and also from the success in treatment. Chloroform was used freely during labor, and with the best results. Nitrite of amyl is frequently of service in these cases.

The Pubic Segment of the Pelvic Floor during Labor.

Webster (*Ibid.*), from a series of dissections in the study of this question, concludes that the pubic segment is not pushed downward during labor, but

elevated by the upward traction of the uterus. This force is exerted from the beginning of labor, but is counterbalanced in the beginning. Long persistence of the bag of membranes also retards elevation. The greater portion of the bladder is not drawn up during labor, but remains behind the pubes. The urethra is not elongated during labor.

Cæsarean Section.

Murray (*New York Medical Journal*, page 673, 1890) reports the case of a multipara, in whom a contracted pelvis (anterior-posterior diameter three and five-eighths inches) delayed labor. Prolapse of the left arm and hand resulting, with tetanus of the uterus, it was determined to perform Cæsarean section, to which the patient assented. The elastic ligature was used to control bleeding, and the usual Sänger operation was performed. Recovery ensued, and the child, a healthy male, survived. In contrast to this case, Murray reports one of contracted pelvis, in which, in endeavoring to perform version by Hicks's method, the child become impacted, the head becoming firmly wedged at the brim, necessitating craniotomy. In the second case, Murray would have performed Cæsarean section had the patient been seen before the death of the child.

Macan (*Medical Press*, vol. ci. No. 1) performed Cæsarean section upon a patient much below the average size, in whom the head did not show the slightest tendency to engage at the brim of the pelvis. The patient recovered well from the usual operation, the sutures having been inserted in accordance with Fritsch's method, by which each stitch passes through muscle and decidua. The uterus did not contract perfectly, the patient losing considerable blood *per vaginam*. Complete recovery ensued with the discharge of the uterine sutures.

Puerperal Fever.

At a recent meeting of the Obstetrical Society of London, in a discussion regarding fever in childbed, opened by Boxall, it was concluded that bichloride of mercury remained the best antiseptic known, but that its routine use in douches was not necessary. In several hospitals of London salufer had been tried as an antiseptic, but found inferior to corrosive sublimate.

A Case of Placenta Prævia Complicated by a Transverse Septum in the Uterus.

McCall (*North American Practitioner*, No. 8, 1890) reports the case of a multipara in whom placenta prævia with a transverse uterine septum existed. Although embryotomy was performed, the mother perished from hæmorrhage. The septum was of traumatic origin, the patient having fallen, striking her side against a fence-rail, early during her pregnancy.

The Anatomy of Tubal Pregnancy.

Abel (*Centralblatt für Gynäkologie*, No. 37, 1890) concludes from his studies on this subject that the endometrium forms in the beginning a decidual

membrane in which Friedländer's cellular layer is not fully developed. The superficial epithelial layer of the uterine decidua is present at the second month, although in a degenerate form. That portion of the tube external to the fœtus generally remains unaltered. In the fœtal sac the mucous membrane of the tube forms a decidua vera which is most strongly developed at the extremity of the ovum, at the termination of its greatest diameter, until the serotina is completely atrophied. The superficial layer of the serotina is replaced by the endothelium from the bloodvessels. Beneath this membrane normal epithelium from the mucous membrane of the tube is often found. The epithelium of the villi of the chorion is threefold, two layers over the fœtal, and one over the maternal vessels. The spaces between the villi are dilated maternal bloodvessels whose walls are not broken through by the villi of the chorion.

Suicide during Pregnancy with Rupture of the Uterus.

Neugebauer (*Centralblatt für Gynäkologie*, p. 88, 1890) reports the case of a primipara nearly at term who committed suicide by throwing herself from the third story of a house upon the stone pavement. On examination, fracture of the skull and lacerated wounds of the head and face were found. The uterus could be outlined, but no symptom of labor was present. The patient perished in shock, and post-mortem examination revealed rupture of the uterus, the child lying among the intestines covered by the mesentery. It had evidently occupied the position of breech-presentation during the life of the mother. The patient survived for several hours after her fall, during which time no hæmorrhage could be discovered. The membranes remained unruptured, and probably occasioned the failure to diagnose rupture of the uterus. Although the mother sustained fracture of the skull, she twice sprang from the bed, and became partially conscious on one occasion. A detailed account of the injuries to the mother's pelvis accompanies the report of the case.

A Clinical Study of Puerperal Insanity.

Worcester (*American Journal of Insanity*, volume xlvii. p. 52, 1890), from a clinical study of eight cases of the various types of puerperal insanity, concludes that this disease is not a distinct form of mental trouble. He has not been able to decide, in the absence, of the knowledge that the case was that of a puerperal patient, that any given case was one of puerperal and not one of insanity from some other cause.

A Cranioclast with Pelvic Curve.

Pinzani, in a pamphlet entitled *Un Cranioclaste Inclinatore*, Bologna, 1890, describes a modification of Braun's cranioclast which possesses a pelvic curve. In addition to this, one of the branches is shorter than the other, and is so arranged as to articulate with the first in two different sockets, thus enabling compression to be made at a considerable angle by which more perfect crushing of the head must result. The cephalic extremities of the blades have been somewhat altered to meet the changes in the handles.

GYNECOLOGY.

UNDER THE CHARGE OF

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Schücking's Method of Operation for Retroflexion.

At a discussion of this operation at a recent meeting of the Leipzig Obstetrical Society (*Centralblatt für Gynäkologie*, No. 31, 1890) Schücking stated that sixty-two cases had been reported, forty-eight being his own. He had found that it was also possible to cure prolapsus by his method, since the uterus was maintained in a position of anteflexion—the chief result at which Thure Brandt aims by his manipulations.

Sänger could not understand how prolapsus could be cured by the vaginal ligature, since it could hardly fix the uterus in a position of anteflexion, and must, moreover, cause lateral deviation of the organ. Although no serious injuries to the bladder or intestines had yet been observed, he did not see how these could be absolutely avoided. In order to avoid perforation of the bladder he suggested separation of the organ as high as the vesico-uterine fold of peritoneum before passing the suture. He called attention to the fact that Brandt aimed rather at *posterior* fixation of the prolapsed uterus by restoring the tone of the relaxed sacro-uterine ligaments.

Schücking denied that lateral deviation of the uterus was caused by the vaginal ligature.

Secondary Cancer of the Ovary.

Sänger reported at the same meeting the following cases of carcinoma ovarii:

Case I.—The patient was a stout woman, forty-six years of age, whose uterus had been removed for carcinoma corporis in June, 1888, the right tube and ovary being left *in situ*. She made an easy recovery, and remained in good health until August, 1889, when a solid tumor appeared in the abdomen, which grew rapidly, and was associated with ascites, anasarca, and emaciation. As the condition was supposed to be metastatic deposits in the peritoneum, and the patient was very weak, laparotomy seemed to be inadvisable. During the next few months five gallons of ascitic fluid were withdrawn at different times. After the last aspiration she improved so much that it was decided to make an explorative incision. This was done in February, 1890. The tumor was found to be a slightly adherent carcinoma of the right ovary, weighing twenty pounds, unaccompanied by metastatic deposits. The cicatrix in the vaginal vault was carefully examined, and exhibited no traces of a recurrence of the disease. The patient made a rapid recovery, and was in perfect health four months later. The interesting features in this case were the recurrence of the disease in the remaining ovary (a strong argument in favor of always removing the adnexa with the

cancerous uterus), and the presence of ascites and anasarca without general carcinomatous disease of the peritoneum. The ascites in this instance was probably due to pressure of the movable tumor upon the iliac and azygos veins; as the growth rose into the abdominal cavity this pressure became less, which result was also favored by the removal of the fluid.

CASE II.—A woman, thirty-six years of age, had been operated upon (curetting?) nine months before for diffuse adenoma of the cervix and body of the uterus. Laparotomy was performed for the removal of an abdominal tumor, which proved to be a cysto-carcinoma of the right ovary weighing twelve pounds. As the patient was very stout, it was possible that the tumor existed at the time of the first operation and was overlooked. The case was interesting as indicating a direct relation between the semi-malignant growth of the endometrium and the undoubted carcinomatous tumor of the ovary. [Unfortunately no mention is made of the condition of the tubes in either case. This is a serious omission, since it leaves the reader in doubt as to whether the disease extended to the ovary by continuity, or developed by metastasis, or *de novo*. We have always insisted upon the importance of removing the adnexa in cases of total extirpation for malignant disease of the corporeal endometrium in order to avoid what Sänger has shown is a real, and not a theoretical, danger from recurrence. When the disease is confined to the cervix it is not absolutely necessary to remove the tubes and ovaries, except to avoid certain psychoses which have occasionally been observed when the ovaries remained functionally active after extirpation of the uterus alone.]

CARCINOMA OF THE OVARY WITH RECURRENCE IN THE BREAST.

RONPINEL (*Annal de Gynécologie*, No. 1, 1890) performed laparotomy upon a woman, æt. fifty-three, who had been tapped thirteen times for ascites. A cysto-carcinoma of the left ovary, the size of the two fists, was removed and the patient made a smooth recovery. There were no metastases in the peritoneum. Three months later a small nodule appeared in the left breast and grew slowly for seven months, when the breast was amputated. Five months after a second operation was necessary on account of a recurrence in the cicatrix. Six months later the patient again reported, and it was found that not only had the disease returned in the breast, but the ascites had reappeared. After tapping, multiple nodules could be felt over the entire surface of the peritoneum. The patient succumbed from exhaustion after having been tapped three times.

PRIMARY SARCOMA OF THE VAGINA IN YOUNG CHILDREN.

FRICK (*Virchow's Arch.*, Bd. cxvii. 2, p. 248) reports two cases of this rare affection, only seven of which have been recorded, and all but one have terminated fatally. One child was seven months old, the other two and one-half years; in the former the growth rapidly recurred after removal; in the latter a second operation was performed eight months after the first, since which two years had elapsed without return of the disease. Sarcoma in this region in children is of the mixed variety, and assumes a polypoid

shape. It is purely local, spreading by direct continuity, and terminating fatally in less than a year. The cases reported are the first in which operative interference was attempted. In excising these growths the entire base of the tumor, and as much as possible of the adjacent vaginal wall, should be removed.

Osteoplastic Resection of the Sacrum in Operations upon the Female Pelvic Organs.

Bernhard von Beck (*Zeitschrift für Geburtshülfe und Gynäkologie*, Bd. xviii. Heft 1) reports seven cases in which Hegar performed this operation in order to render accessible disease of the internal pelvic organs. In four instances the condition was cancer of the uterus, in one pelvic abscess, in one double pyosalpinx, and in one old perimetritis. The latter case was of considerable interest, as it was one of persistent pain after removal of the adnexa. A hard, sensitive nodule was felt in Douglas's pouch, which seemed to be the point from which radiated the neuralgic pains. It was excised from below after preliminary resection of the sacrum, and the patient was permanently relieved. Hegar has modified Herzfeld's original operation, and does not remove any of the bone. After dissecting away the rectum from its anterior surface, a chain saw is introduced between the third and fourth foramina, the sacrum is sawn through at right angles to its long axis, until the periosteum on its posterior surface is reached; the lower fragment is then turned upward and backward, and after the operation is restored to its place, and the external wound is closed over it. The advantages claimed for this method of extirpating the uterus are as follows: The field of operation is clearer than in the vaginal method, hæmorrhage is at once observed and is more readily controlled, and there is less danger of wounding the bladder and ureters; the entire uterus may be removed without opening the peritoneal cavity, thus reducing the chances of septic infection to a minimum.

Aseptic Laparotomy.

Fritsch (*Centralblatt für Gynäkologie*, No. 29, 1890) has rejected all chemical antiseptics in abdominal surgery, except for cleansing the patient's skin and the hands of the operator and assistants. Towels, sponges, and instruments are sterilized by steaming, and boiled water is used throughout the operation for all purposes. "From the beginning until the application of the bandage no chemical disinfectant touches the wound." A table is appended showing the results of fifty-two laparotomies performed according to this method in the course of five months (including one Porro, one Cæsarean section, and nine laparo-myomotomies), with a single death from persistent ether-vomiting.

Electro-therapy in Gynecology.

Nagel (*Archiv für Gynäkologie*, Bd. xxxviii. Heft 1) after a careful trial of Apostoli's method during a year, arrives at the following conclusions regarding the electrical treatment of uterine fibro-myomata. The treatment is to be regarded as purely symptomatic. The constant current

in these cases relieves pain, especially when this is due to former peritonitis; in order to accomplish this result it is not always necessary to introduce one electrode into the uterus. As the peritonitis is improved the tumor becomes more movable, and the tension of the abdominal walls is diminished. Hæmorrhage is often lessened by the constant current, especially if the entire endometrium is accessible to treatment. Through the relief of pain and the checking of the hæmorrhage, as well as by the favorable influence of the agent upon the intestines, the general condition of the patient is much improved. Although the writer has not observed any diminution in the size of the tumor, he believes that it may occur up to a certain degree.

The general impression which he derived from studying the effects of the electrical treatment in pelvic disease was that in some cases a cure might be effected, but that the results obtained did not surpass those which followed other methods of treatment, when the latter were carried out as carefully and persistently as the former.

Vaginal Hysterectomy for Cancer.

Flaischler (*Deutsche med. Wochenschrift*, No. 29, 1890) reports twenty cases of total extirpation operated upon in the past five years, with three deaths from sepsis. Seven patients had since died from the disease, and eleven had no recurrence, of whom six had been operated upon at least three years before. He insists upon greater care in the selection of cases, not so much because of the immediate as of the remote results of the operation. Only those are suitable for the radical operation in which there is strong probability that the cure will be permanent. It is not justifiable to remove every uterus which can be easily drawn downward when there is suspicious induration in the broad ligaments. Sometimes it is impossible to determine positively, even under ether, whether the perimetric tissues are involved or not, or to decide between malignant and simple inflammatory indurations in the broad ligaments. Under these circumstances it is better to give the patient the benefit of the doubt.

According to Volkmann, a patient can only be regarded as cured when three years have elapsed after the operation without recurrence, while Fritsch places the limit at six years. Tanner believes that while a patient may be said to be cured, it is only a question of a few or many years before the disease returns. Flaischler regards the latter view as too pessimistic, although sufficient evidence has not yet been accumulated to decide positively against it. He thinks that total extirpation is no more dangerous than high amputation (!); the latter operation should be regarded as a transitional step in the development of the former, and is not to be compared with it.

Recent Modifications in the Technique of Laparo-myomotomy.

Kelly (*Medical News*, vol. xlvi., No. 52, 1890) describes the following modification of Hegar's and Schröder's methods: A long incision is made, the tumor is elevated, and the pedicle constricted with a rubber cord; the growth is removed one or two inches above the cord by splitting the peritoneum and excising a wedge-shaped piece from the stump. The cervical canal is dis-

sected out and thoroughly cauterized. The raw face of the stump is closed by a continuous buried suture of catgut, its peritoneal edges being united by interrupted silk sutures, the long ends of which are left uncut. The rubber ligature is now removed, and if there is much oozing it may be necessary to ligate one or both uterine arteries, which is readily accomplished by passing a stout, curved needle, armed with catgut, through the side of the stump, the latter being drawn over to the opposite side by means of the long ligatures. The parietal peritoneum is united to the peritoneal covering of the stump, below the line of the raw surface, by a continuous catgut suture. The wound is dressed in the ordinary way with aseptic gauze, and the long ligatures are brought out through the opening which is left at its lower angle and through the dressing, and are secured by a pair of long Keith's forceps. The stump is thus kept from slipping back into the abdomen, and is readily accessible in case of hæmorrhage. The silk sutures come away, or may be removed, in ten days and the opening in the abdominal wall rapidly fills up by granulation. The advantages claimed for this method over the intra-peritoneal are the less risks from hæmorrhage and sepsis; over the extra-peritoneal are the absence of the sloughing which necessarily takes place when the rubber ligature is employed, and the diminished traction on the stump, because the operator is not obliged to raise it up high enough to suture the peritoneum to it below the ligature.

FEHLING (*Centralblatt für Gynäkologie*, No. 29, 1890) finds that the sinus left after separation of the stump heals more quickly if its edges are freshened by scraping (after thorough disinfection), and are brought together by deep and superficial silver sutures, which include all the layers down to the peritoneum. A small drain is left at the site of the cervical canal. He has lost only three out of thirty cases of myomotomy in which the pedicle was treated by the extra-peritoneal method.

TREUB (*Journal de Médecine de Paris*, No. 30, 1890) reports forty-two cases of hystero-myomectomy with four deaths, only one of which was due to sepsis. His method is as follows: After lifting the tumor through an abdominal incision of ample length, the ovarian arteries and tubes are ligated on both sides, then the pedicle is constricted with a permanent elastic ligature (consisting of a Charrière's *sonde filière* that has been kept in strong carbolic solution), which is cut short; the uterus and tumor are removed, and the cervical canal is disinfected with a solution of bichloride, 1 : 500. The stumps of the uterus and broad ligaments are sprinkled with iodoform and all are dropped back into the pelvic cavity, care being taken that the latter is free from coils of small intestine which might readily be imprisoned between the uterine stump and the brim of the pelvis. The writer says that by this method the most complicated operation can be completed in three-quarters of an hour. In all his cases the patient was able to leave her bed on the fourteenth day, and was discharged at the end of three weeks.

LEOPOLD (*Archiv für Gynäkologie*, Band xxxviii. Heft 1) believes that myomotomy is indicated when the tumor is larger than a child's head, is growing rapidly, and affects the general health by reason of the pain, hæmorrhage, and pressure-symptoms to which it gives rise. If the tumor is subserous, and fairly pedunculated, he incises the capsule, shells it out, and

closes the peritoneal wound without opening the uterine cavity. If only a small opening into the uterine cavity is made, the branches of the uterine arteries should be ligated on both sides and the surface of the stump should be closed with deep and superficial sutures, after which it is dropped back. When a considerable portion of the uterus would be removed with the tumor, it is better to excise the entire mass and to treat the stump according to the extra-peritoneal method. The writer prefers vaginal extirpation of the myomatous uterus when the tumor is not larger than a child's head, but gives rise to severe hemorrhage and pressure-symptoms, when one or both ovaries are diseased, and are so firmly adherent that they cannot be removed, and when the patient is too weak to stand laparotomy. The steps of the operation are as follows: After thorough disinfection of the parts, the rectum is stuffed with iodoform.gauze. If the vagina is too narrow, more space is gained by incising it laterally. The vaginal attachment to the cervix is then divided, and the bladder is separated from the cervix; Douglas's pouch is opened, and a sponge is introduced to prevent prolapse of the gut. The uterus is drawn down with a volsella, and the broad ligaments are ligated and divided. If the uterus is so large that it cannot be drawn down, and the tumor is accessible through the posterior incision, its capsule may now be opened, and it may be shelled out with the finger. After the uterus has been removed the peritoneal edges of the wound are sutured in the middle, openings being left at each side where the stumps are placed, and the vagina is tamponed with iodoform-gauze. The writer has performed fifty-six laparomyomotomies with twelve deaths, and twenty-one vaginal extirpations for myoma with three deaths.

KOCHER (*Correspondenzblatt für Schweizer Aerzte*, No. 26, 1890) first ties off each broad ligament in two portions, the upper ligature including the ovarian, and the lower the uterine artery. A stout ligature, composed of numerous pieces of fine silk twisted together, is then made to encircle the uterus at the level of the uterine artery and this is drawn as tight as possible and is tied. The peritoneal covering of the stump is first incised and the tumor is then drawn upward so that the muscular tissue will be divided at a lower level. The cervical canal is disinfected with sublimate solution, and is thoroughly cauterized with the Paquelin. The raw surface of the wedge-shaped stump is then closed with deep and superficial continuous sutures of silk, the lateral being applied in the same manner as in the modified Cæsarean section, so as to roll in the peritoneal edges, and to bring the serous surfaces in contact. The stumps of the broad ligaments are covered with peritoneum in the same manner. The stump is dropped back, and the abdominal wound is treated in the usual way.

THE TREATMENT OF RECENT GONORRHŒA WITH THE CONSTANT CURRENT.

PROCHOWNICK (*Münchener med. Wochenschrift*, No. 27, 1890) was led to test the antimycotic action of the positive pole of the galvanic current in cases of gonorrhœa in women. Assuming that the cervical canal is the chief seat of infection, whence it extends along the endometrium to the tubes, it is important that it should be arrested at this point. To this end the positive

pole was introduced into the uterus and a current not exceeding 120 milliampères was used for not longer than ten minutes. The cervical discharge was examined microscopically before and after the treatment, the presence of gonococci being demonstrated in each of the four reported cases. In every instance after four *séances* the microörganisms disappeared, and after six or seven the discharge intead of being a thick, greenish-yellow one, became thin and watery.

The writer states that this method of treatment cannot be applied to specific urethritis in the female, because the urethra is so sensitive that a current with an intensity above 40 milliampères would not be tolerated, and any strength below 100 milliampères would be powerless to destroy the cocci.

Hyaline-fibroid Ovarian Disease.

Gibbes (*Boston Medical and Surgical Journal*, August 7, 1890) supplements a former paper on the "Origin of Ovarian Cysts" by a statement of the results of his further microscopical studies of hyaline degeneration of the ovarian stroma, which he now believes to be quite common. He has come to the conclusion that it is not a true degeneration, but is a new formation of fibrous tissue. The initial process in this change is the appearance of small wavy processes of fibrous tissue in the midst of the stroma. These increase in size and number, still preserving their tortuous arrangement, while between, and closely united to, them appear branched connective-tissue corpuscles. This change is not peculiar to the ovary, but is found also in pulmonary tubercle and in carcinoma and sarcoma of slow growth—in short, under conditions of chronic irritation. In all these formations the new growth is of such low vitality that its central portion tends to break down and form a cavity, which cavity in the ovary may become filled with fluid, undergo gradual dilatation, and form a large cyst. Clinically, the relation between chronic irritation and ovarian disease is evident. "This irritation is probably of nervous origin, and is brought about by an abnormal condition of the patient and her surroundings." If taken at an early stage, the writer believes the affection to be easily curable.

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